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A  
MANUAL  
of  
VERTEBRATES  
of  
MANITOBA

Fishes

Amphibians

Reptiles

Birds

Mammals

178 Illustrations  
and 7 Maps



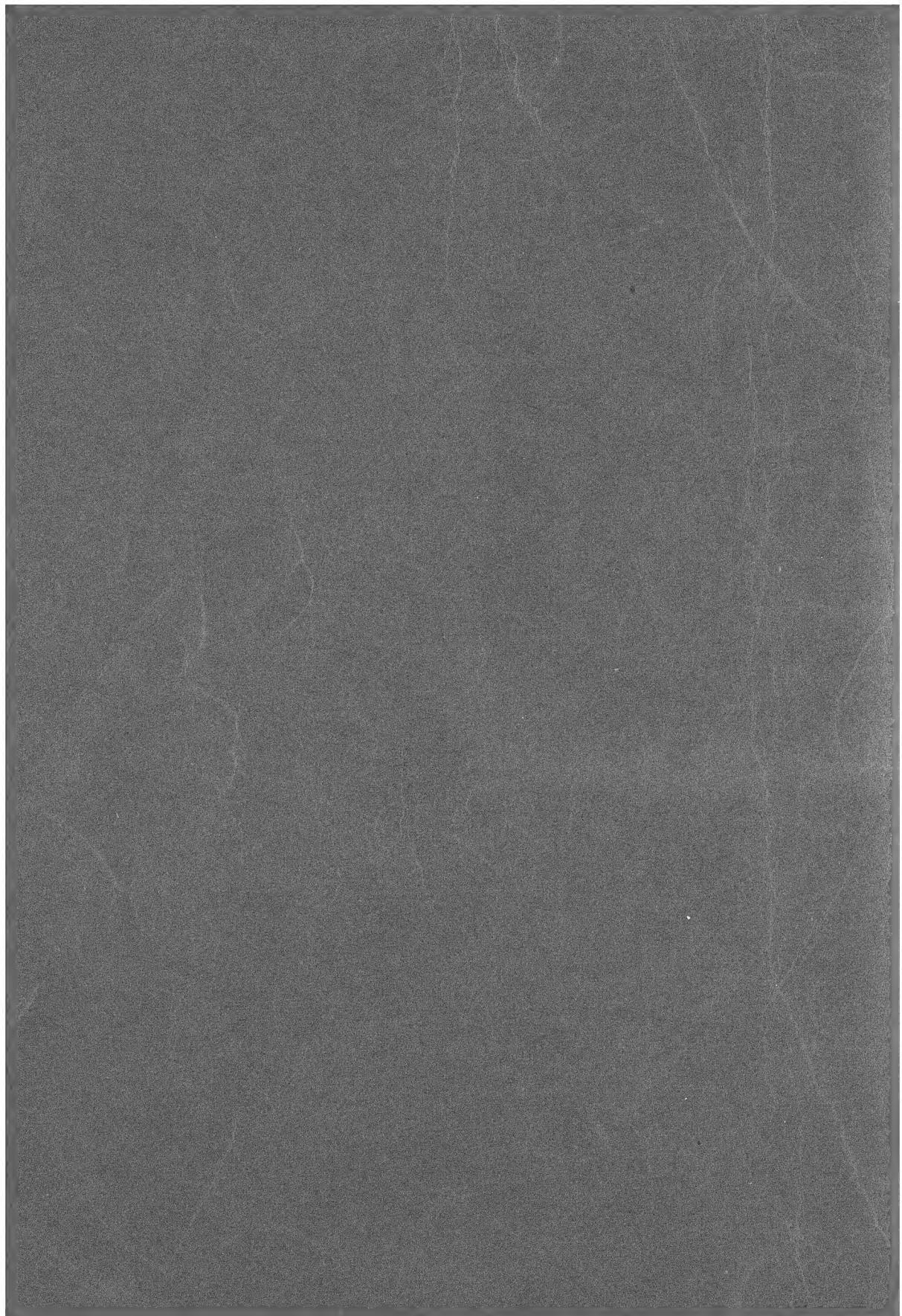
THE MAGPIE

**V. W. JACKSON**

Asst. Prof. Zoology

University of Manitoba  
WINNIPEG, CANADA

Price 60c



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## FOREWORD

With the passing of Thompson Seton's Life-Histories of Northern Animals (1909) and the lack of any manual on our vertebrate fauna, this simple classification and ready reference to the fishes, amphibia, reptiles, birds and mammals of Manitoba, and the West, has been prepared to meet a long-felt want, and to stimulate observation and systematic study of our fauna.

Familiarity checks observation. Hunters and trappers are more interested in behaviour than relationships and overlook the distinguishing characteristics which the taxidermist and taxonomist must observe to establish identity and classification. Keys for identification, therefore, embody the salient points which should be observed; and the resulting systematic classification shows family relationships that foster comparisons and fix important features. They are the minimum of words and the maximum of meaning—**nothing is noted that is not significant.**

Common names are given prominence to catch the eye in going from the known to the unknown. Scientific names show the relationship: those ending in ES are ORDERS; those ending in AE—families; those of the same genus, very closely related.

The 90 fishes, 10 amphibians, 7 <sup>name twelve more</sup> reptiles, some 200 birds and 60 mammals, here classified, is a fairly complete vertebrate fauna of the Canadian prairies, except for birds, which number over 300. The fishes are those listed by Dr. A. Bajkov for the Hudson's Bay Drainage System—Canadian Field-Naturalist, Apr., 1928, and the birds and mammals are those listed by Thompson Seton, with a few recent name changes as in Millers List of North American Recent Mammals, 1923; Anthony's North American Mammals, 1928 and Stuart Criddle's Mammals of Aweme—Can. Field-Naturalist, Oct., 1929. Such standard lists make it unnecessary to give authority for scientific names in an established code. As most of our mammals are type species of the area collected by Dr. Richardson, 1819-1827, the geographic race is understood as the type, unless otherwise indicated.

The new arrangement and nomenclature of the American Ornithologists Union Check List of 1931, is followed and outlined on Page 11. For more complete identification consult the new edition of Birds of Canada.

Winnipeg, November, 1934.

*W. J. Jackson*



*Fish not bony- Lamprey.*

## FISHES

**THE LAMPREYS**—Eel-like, but circular mouth, suctorial; without scales, paired fins, gill arches or jaws; cartilaginous skeleton; no ribs; single median nostril; eyes glazed or covered; 7 gill sacs and pores back of the eye; median fin posterior half; parasitic on sturgeon, etc.

—**CYCLOSTOMATA: MARSIPOBRANCHII: PETROMYZONTIDAE.**

**Icthyomyzon**—Circular mouth with numerous radiate teeth;

**concolour**—Silver slate all over, dark spot above each gill pore; mouth wider than body, a foot long.—**COMMON LAMPREY.**

**castaneous**—Smaller, yellowish brown.—**NORTHERN LAMPREY.**

**Lamperta**—Teeth few, only 3 bicuspids on either side of mouth with bridged cusps above; 2 dorsal fins.

**wilderi**—Bluish-black, about 8 inches and 70 muscle segments, gills to anus.-----**BROOK LAMPREY**

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### TRUE FISHES: TELEOSTOMI

**STURGEONS**—Ganoid fish with 5 rows of bony, keeled plates, snout flat and protruding beyond ventral sucking protractile, toothless mouth, with 4 barbels on forward lip; 4 gills but no gill rakers; a spiracle above the eye; tail heteroceral.

—**ACIPENSERIDAE.**

**Acipenser**—

**sturio oxyrynchus**—5 rows of small plates between dorsal (10) and laterals (27), coastal river; to 500 pds. —**SEA STURGEON.**

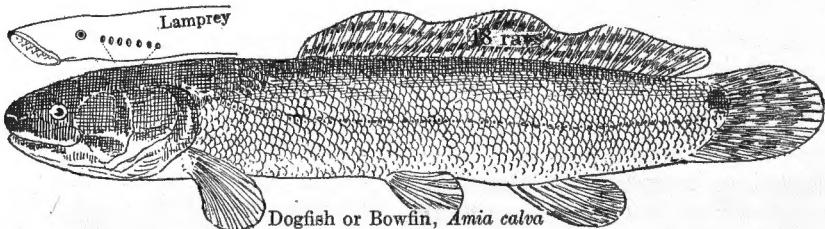
**rubicundus**—Series of minute plates between dorsal (15) and laterals (38), in land waters and lakes, to 50 pds.

—**LAKE STURGEON**

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**DOGFISH: BOWFIN**—Long dorsal fin (48 rays); tail convex; head blunt; body oblong, 2 ft. ----- **Amia calva.**

—**AMIIDAE.**



**CATFISH**—No scales, large, flat, broad head and large mouth with barbels, premaxillary villous teeth; first ray of dorsal and pectoral, a stout spine; Bullheads, Channel Cats ----- **SILURIDAE.**

**CHANNEL CATS**—Bony ridge from head to dorsal spine; head conical; mouth small; 5-25 pds., commercial ----- **Ictalurus.**

**Ictalurus punctatus**—Olive spots; large eye; 2 ft.; 5-25 pds.

—**SPOTTED CATFISH.**

**BULLHEADS**—Small catfish; head broad; mouth large; bony ridge interrupted; adipose fin, free backward----- **Ameiurus.**

**Ameiurus lacustris**—Caudal fin forked; 2-5 ft., 5-40 pds.

—**GREAT LAKES CATFISH.**

**A. nebulosus**—Tail rounded; 1.5 feet, mottled; anal fin 21 rays.

—**HORNED POUT.**

**A. melas**—Small variety, 10 inches; black; anal fin 18 rays, deep.

—**BLACK BULLHEAD.**

Buffalo fish has a buffalo head.  
lateral line is decurved.

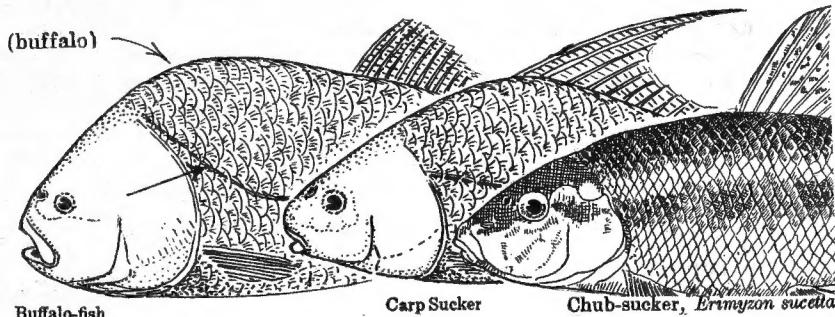
### CATFISH and SUCKERS

*Noturus flavus*—Adipose fin, adnate but notch at caudal; anal 16 rays; barbels short, poison gland on pectoral spine; skin tough and villose; sluggish streams ----- **STONE CAT.**

*Schilbeodes gyrinus*—Small, 5 inches, yellowish brown; black lateral line; pectoral spine, smooth but poisonous; adipose fin continuous with caudal; anal fins 14 rays ----- **MAD-TOM.**

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**THE SUCKERS**—Head blunt and naked; mouth turned downward, protractile, toothless, sucker; lips thick, fleshy; fins soft-rayed; only one dorsal; no adipose fin; pelvics ventral; air-bladder 2 or 3 sections ----- **CATOSTOMIDAE.**



**BUFFALO-FISH**—Suckers with large mouth, protractile forward; large head and shoulders; lateral line decurved, ----- **Ictiobus.**

*Ictiobus cyprinella*—Lips smooth; 2-3 ft., 8-40 pds., large streams. ----- **BUFFALO FISH.**

*I. bubalus*—Small mouth, lips plicate, downward.

SMALL-MOUTH BUFFALO-FISH.

*CARP SUCKERS*—Carp-like with long dorsal fin of 27 rays, first one elongate; mouth downward ----- **CARPOIDES.**

*Carpoides thomsoni*—Head small and pointed; lips thin and white; to 20 inches, Great Lakes basin ----- **CARP SUCKER.**

*C. velifer*—Lips thick and reddish; acute; anterior rays elongate; to 12 inches; Red River basin ----- **QUILL BACK.**

**COMMON SUCKERS**—Elongate and round; scales fine; mouth large and downward; lips thick, papillose; protractile; dorsal fin short but high ----- **Catostomus.**

*Catostomus catostomus*—Scales very small, 100 in lateral line; to 30 inches; head long, snout overhanging; lower lip deeply lobed; spawn in spring, up rivers ----- **NORTHERN SUCKER.**

*C. commersoni*—To 18 ins.; 67 scales in lateral line; small streams and ponds ----- **COMMON SUCKER.**

*C. nigrocanis*—Concave between small eyes, placed high; grows papillae in thick upper lips; lower fins large and red; back brassy olive with dark cross-blotches.

—**BLACK SUCKER, STONE ROLLER, HOG MULLET.**

*Erimyzon suetta oblongus*—No lateral line; body compressed; scales large; coppery lustre; to 10 inches, common. **CHUB SUCKER.**

**REDHORSES**—Scales large; only 45 in lateral line; lips plicate; sucker mouth; small ----- **Moxostoma.**

*Moxostoma anisurium*—To 18 inches; dorsal fin 15 rays; lower fins reddish; mouth large ----- **WHITENOSE SUCKER.**

*M. aureolum*—To 24 inches; dorsal fin 12-14 rays; mouth small; lips thick ----- **RED HORSE.**

## MINNOWS

**THE MINNOWS**—Small, slender, active; head naked; jaws toothless; no caeca; one spineless dorsal, back fin; minnows chubs, dace, everywhere ----- **CYPRINIDAE**.

**GOLDFISH**—Carp-like; long back dorsal; olivaceous first year, turning golden in aquaria ----- *Carassius auratus*.

**RED-BELLIED DACE**—To 3 inches, black lateral line incomplete; other lateral band through eye to black spot on tail, silvery between bands; males scarlet belly in spring, *Chrosomus erythrogaster*. See drawing below ----- *Notropis*.

**SHINERS**—Small active minnows; scales large and silvery; tail forked. ----- *Notropis*.

**Notropis cayuga**—To 2.4 inches; black lateral lines through eye to caudal spot; belly yellow; chin pale; mouth small (see cut). ----- **CAYUGA SHINER**

**N. blennius**—No caudal spot; pale lateral line ----- **STRAW MINNOW**.

**N. hudsonius**—Black tail spot; body pale with broad silvery band; to 6 inches; blunt snout; lateral line decurved, dark (?). ----- **SPAWN EATER**.

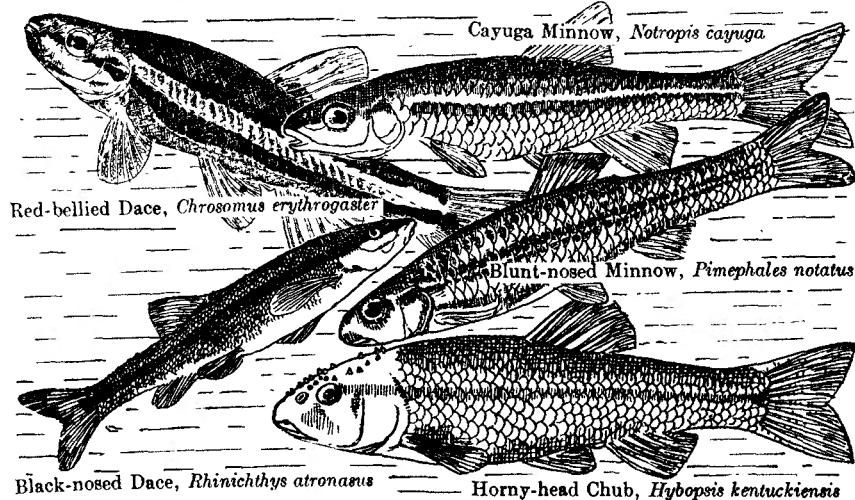
**N. cornutus**—5-8 inches; common, steel blue above, silvery below; head warty or rough, body carp-like ----- **SILVERSIDES**.

**N. jejunus**—To 3 inches; slender, pale with silvery lateral band; anal 7 rays; snout blunt; mouth large, oblique; eye large. ----- **POOR MINNOW**.

**N. rubifrons**—Anal rays 10, olive black, silvery sides; to 2-8 inches. ----- **ROSE MINNOW**.

**N. atherinoides**—Anal rays 11; greenish back, silvery sides, to 6 inches. ----- **GREAT MINNOW**.

**N. umbratilis cyanocephalus**—Anal rays, 12; dorsal, 8; head blue; to 3 inches ----- **RED-FIN MINNOW**.



**MINNOWS**—Less than 4 inches; intestine over twice length of body; teeth 4-4; first ray of dorsal fin separate; head blunt. ----- *Pimephales*.

**Pimephales promelas**—To 2.4 inches; blunt and stout; dark lateral band incomplete; black bar across dorsal fin; head of male black in spring (promelas) ----- **FATHEAD MINNOW**.

**P. notatus**—To 4 inches; lateral line complete, dark stripes, sides bluish; dark spot at base of dorsal; snout decurved. ----- **BLUNT-NOSED MINNOW**.

**Hybognathus nuchalis**—To 6 inches; olivaceous to silvery; mouth narrow ----- **SILVER MINNOW**.

### MINNOWS and GOLD-EYES

**DACE**—3-5 inches; slender, dark; head long with a small barbel on upper jaw; scales small, males rosy ..... *Rhinichthys*.  
*Rhinichthys cataractae*—To 5 inches; snout far beyond mouth.

—**LONG-NOSED DACE**.

**R. atronasus**—To 3 inches; snout barely beyond mouth, but black. See drawing, Page 5 ..... **BLACK-NOSED DACE**.

**CHUB**—Horny heads, robust; 8-10 inches; barbels ..... *Hybopsis*.  
*Hybopsis storarianus*—To 10 ins.; not red, greenish-silvery, eyes large; body compressed and elevated back, **STORER'S CHUB**.

**H. kentuckiensis**—To 10 inches; fins orange; dorsal behind ventral. See drawing, Page 5 ..... **RIVER CHUB**.  
*Platygobio gracilis*—To 12 inches; head white and flat.

—**FLAT-HEAD CHUB**.

*Couensis plumbeus*—To 6 inches; lead color to silvery with dark lateral. ..... **LAKE CHUB**.

**GOLD-EYES**—Body broad, much compressed, thin, with large silvery scales; eyes large; head narrow and naked; mouth small, toothed; dorsal far back, no adipose fin ..... **HIODONTIDAE**.

*Hiodon chrysopsis*—Endemic to Lake Winnipeg and its tributary waters; the "smoked Gold-eye" of Manitoba.

—**GOLD EYE**.

**H. alosoides**—Belly ridged at ventral fin; dorsal small, only 9 rays; anal 32; sides golden lustre; to 12 inches; Saskatchewan and North ..... **SHAD MOONEYE**.

**H. tergisus**—Belly ridged ventral to anus; dorsal 12 rays; anal 28; large silvery eye; sides silvery; to 15 inches; Winnipeg River and North; Red River ..... **RIVER MOONEYE**.

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### SALMONIDAE: WHITEFISH: TULLIBEE: SALMON and TROUT

Dorsal fins two, anterior rayed; posterior, an adipose lump; no barbels; no spines; scales, cycloid; stomach siphonal, with many pyloric caeca (15-200); northern; finest game and food fish.

**WHITEFISH**—Head and mouth small, toothless (?); scales large, silvery body compressed; stout adipose fin ..... *Coregonus*.

*Coregonus clupeaformis*—Herring shape, rhomboid, head very small; smooth; to 2 1-2 feet, and 15 pds.; deep water, except during fall spawning; leading commercial fish ..... **WHITEFISH**.

*C. quadrilateralis*—Rounder, smaller, to 12 ins.; back broad; bluish above; silver beneath; northern ..... **MENOMINEE WHITEFISH**.

*C. ladbrookicus*—Tongue with 3 series of small teeth; body elongate; northern ..... **RIVER WHITING**.

*Rocky Mountain Whitefish*—Found in the Saskatchewan River and northward, has a shorter snout, a longer maxillary, fins tipped with black ..... *C. williamsoni*.

**TULLIBEE, CISCOES and LAKE HERRING**—Larger mouth than whitefish, and horizontal, longer jaws, the lower slightly projecting.

—**Leucichthys**.

**Leucichthys tullibee**—Body deep, compressed, to 18 inches; adipose fin longer than the eye, which equals snout; toothless; centre of scales silvery, margin dotted ..... **TULLIBEE**.

**L. nigripinnis**—Fins black, mouth large, teeth minute.

—**BLUEFIN; BLACKFIN**.

**L. hoyi**—Head long, eye large, lower jaw projecting; sides silvery; fins short; pale; bluish, without specks; to 12 inches.

—**LAKE MOONEYE, BLOATER**.

**L. artedi**—Scales and fins with dark specks, back greenish, sides silvery; spawn in shoal waters in November; to 15 inches.

—**CISCOE** (when small) **LAKE HERRING**.

**TROUT**—Slender, spotted game fish, with large mouth extending beyond the eye; scales, small and imbedded *Salvelinus*.  
**LAKE TROUT**—Large to 36 inches and 10-16 pds.; gray spots on greenish sides; vomer crested with strong teeth.  
—*Cristivomer namaycush*.  
**SPECKLED TROUT; BROOK TROUT**—Spotted with red; 8-12 inches, 1-4 pds.; finest game fish; spawns in fall, hatches in spring.  
—*Salvelinus fontinalis*.  
**GRAYLING**—Compressed and slender to 18 inches; large dorsal of 20 rays; gray, with small black spots; tail forked; small adipose fin; cold waters of the north. Lower Nelson River.  
—*Thymallus signifer*.

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**ESOCIDAE**

**PIKE; PICKEREL**—Large voracious fish, with strong teeth and straight back line, and dorsal fin far back *Esox*.  
**Esox lucius**—Greenish, with white blotches; to 40 inches and 30 pds.; cheeks scaly *JACK FISH*.  
**E. masquinongy**—Dark olive with black blotches; to 48 inches and 40 pds.; cheeks not scaly on lower half; great game fish, but not so common. *MUSCALONGE*.

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**STICKLEBACKS**—Minnows; 2-4 ins. with dorsal spines (2-9).  
—**GASTEROSTEIDAE**.  
**Gasterosteus aculeatus**—Sides with bony plates, silvery; back dotted; dorsal spines, serrate with rough basal plates; olivaceous; to 4 ins.; ventral spine with basal cusp. **COMMON STICKLEBACK**.  
**Eucalia inconstans**—To 2.5 ins.; 5 spines; males black in spring; reddish head; females olivaceous, dotted with black; common in small streams *FIVE-SPINE STICKLEBACK*.  
**Pungitius pungitius**—10 spines, body naked; to 3 ins., olivaceous; with dark bars; tail keeled; eye large.  
—**TEN-SPINE STICKLEBACK**.

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**PERCOPSIDAE**

**TROUT PERCH**—Dorsal, anal and ventral fins with one or two spines; adipose fin present; slender to 6 ins.; in Red River; silver stripe along lateral line, and dark spots on back.  
—*Percopsis guttatus*.

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**BASS**—Much compressed, rhomboid; dorsal fins confluent; mouth upward; teeth in villiform rows *CENTRARCHIDAE*.  
**SMALL-MOUTHED BLACK BASS**—Mouth not to eye; scales small; young spotted but no lateral band; clear, cold lakes. Introduced into West Hawk Lake *Micropterus dolomieu*.  
**LARGE-MOUTHED BLACK BASS**—Mouth extends back of eye; scales larger, 10 rows on cheek; body more compressed, larger; young with broad blackish lateral band; lakes and sluggish waters. *Micropterus salmoides*.  
**CALICO BASS**—Fins large; dorsal 5-8 spines; body silvery olive, mottled greenish; to 12 ins.; streams, ponds, *Poxomis sparoides*.  
**ROCK BASS**—Dark spot in each scale; black opercular spot; eye red and very large, *Ambloplites rupestris*.  
**WHITE BASS**—Dorsal fines, separate; 3 spines in anal fin; sides silvery with 7 or 8 stripes along middle of arched back; deep waters, *Roccus chrysops*.

**PERCH**—Two large dorsal fins, forward, spiny; body slender, round, firm; scales small and toothed; sharp teeth; ventral fin near pectoral; anal fin 1 or 2 spines ----- **PERCIDAE**.

**Lucioperca (Stizostedion) vitreum**—To 30 inches and to 12 pds.; commercial, olivaceous with transverse blotches or bands; belly pinkish; cheeks almost naked.

—**PIKE PERCH; WALL-EYE PIKE**.

**L. canadense**—Cheeks fully scaled; sides brassy with dark mottlings; 3 rows of black spots on dorsal fin; smaller to 15 inches.

—**BLUE PERCH; SAUGER**.

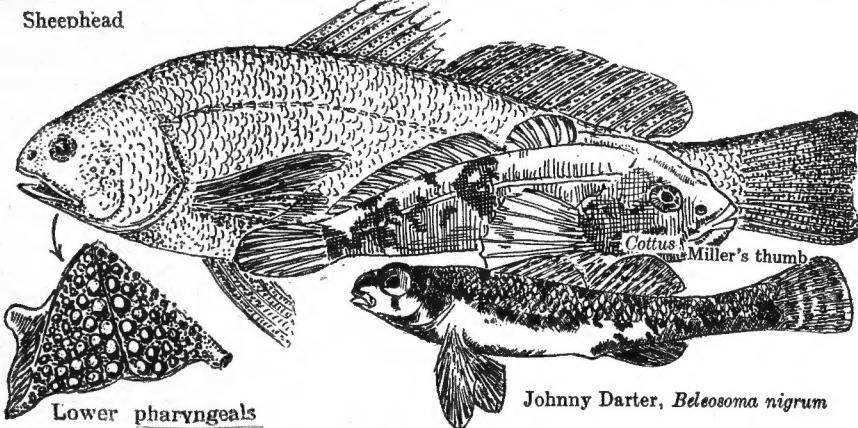
**Perca flavescens**—Yellowish, compressed, back elevated; cheek scaly; fins orange; to 12 ins., **COMMON PERCH; YELLOW PERCH**.

**DARTERS**—Small perch minnows, to 4 ins. active; black sides.

**Hadropterus aspro**—Yellow or greenish with ten dark blotches on lateral line; to 4 inches ----- **BLACK-SIDED DARTER**.

**Beleosoma nigrum**—To 2.4 inches; olivaceous with brown specks on back and dark spots on sides. See cut — **JOHNNY DARTER**.

Sheepshead



Johnny Darter, *Beleosoma nigrum*

**SHEEPSHEAD, DRUMS, CROAKER**—Air-bladder large and complicated to make grunts or drumming sounds; carnivorous but fair food fish; head scaly, large, uneven; dorsal notched, long; otolith large; vertebrate 24; to 3.5 ft. or 50 pds. **SCIAENIDAE**.

**Aplodinotus grunniens**—Lower pharyngeals large, united with coarse paved teeth; snout blunt; back compressed; 2nd anal spine, very long; to 2 feet ----- **SHEEPSHEAD**.

**SCULPINS; MILLER'S THUMBS**—Odd, small 3-5 ins. fish with broad heads tapering to small rounded tail; pectoral fin a broad frill; ventral, small and near pectoral; spine on gill cover.

—**COTTIDAE**.

**Cottus bairdii**—Olivaceous and speckled; to 5 inches.

See drawing ----- **MILLER'S THUMB**.

**C. pollicaris**—Olive with black blotches; upper fins spotted; anal rays 13 ----- **OLIVE MILLER'S THUMB**.

**Cottus cognatus**—Body slender but fins large; 3-4 ins. Northern, includes gracilis and franklinii, **NORTHERN MILLER'S THUMB**.

**C. spilotus**—Speckled and sides barred with black; fins barred and spotted; to 3 in. ----- **SPOTTED MILLER'S THUMB**.

—**GADIDAE**

**BURBOT or LING**—The only Freshwater cod; ventral fins forward of pectorals; and a long continuous dorsal-caudal-anal fin; body long and slimy; depressed in front, compressed behind; long barbels on chin, short ones on nostrils; to 24 ins., in lakes and sluggish rivers, ----- **Lota maculosa**.

# AMPHIBIANS

**SALAMANDER; FROGS and TOADS**—Thin-skinned, scaleless, cold-blooded quadrupeds, born in water from gelatinous eggs; breathing by gills until metamorphosis transforms them into terrestrial or aquatic quadrupeds.

—**BATRACHIA: AMPHIBIA**.

**MUDPUPPY**—Entirely aquatic, with external gill-frills throughout life; 12-24 ins.; in muddy streams and lakes; slimy, mottled grey; eyes very small or coated; only four toes on hind feet.

—*Necturus maculosus*: **PROTEIDAE**.

**SALAMANDERS**—Elongate, lizard-like quadrupeds, with weak limbs, slimy, scaleless bodies, with long laterally flattened tail.

—**CAUDATA**.

**SALAMANDER**—Aquatic with external gills the first year; becoming terrestrial, without gills or slits the second year; 10 ins. long; lungs permit floating without movement; costal grooves 10-12; lead color with lighter blotches; two plantar tubercles.

—*Ambystoma tigrinum*.

Smaller (6 ins.) northern; with only one plantar tubercle but longer toes ----- *A. jeffersonianum*.

The common species, often epidemics of great numbers in wells and damp cellars. The axolotl is the larva form with gills, which sometimes becomes sexually mature in the aquatic phase and breeds.

**FROGS and TOADS**—Larval tadpoles, aquatic from gelatinous eggs; metamorphosis to tailless (Anura) terrestrial adult complete; well-developed hind legs for jumping (Salientia); body short and compact; squatting at rest; mouth wide (insectivorous); eyes large and protruding; skin thin and loose.

—**SALIENTA: ANURA**.

**FROGS**—Green or protective coloration; skin smooth, no parotid glands; maxillary and vomerine teeth; toes webbed; first finger of male swollen; eggs in submerged masses ----- *Rana*.

**LEOPARD FROG**—Green, with black blotches edged with white; eye larger than tympanum; common, often far from water; 3½ ins.

—*Rana pipiens*.

**PICKEREL FROG**—Pale brown, squarish blotches not edged with white; light dorso-lateral ridges; ponds and swamps; small, 2.7 ins.

—*Rana palustris*.

**GREEN FROG**—Green forward, without spots; brownish posterior with small spots and legs barred; large, 4 ins.; from tadpole second summer ----- *Rana clamitans*.

**WOOD FROG**—Small, fawn or pinkish brown; less than 2 ins.; dark band through eye and ear; legs barred; damp woods, seldom aquatic ----- *Rana sylvatica*.

**NORTHERN WOOD FROG**—With shorter legs (2.7 ins.); pale thighs; Canadian zone, north ----- *Rana cantabrigensis*.

**TREE FROGS**—Small, smooth skin frogs; metachrotic; in trees, bushes or foliage; return to water only in spring to breed; eggs in small bunches or singly on surface early in June, about 1,000; eyes of tadpole, lateral, visible from below; hind toes webbed; all toes knobbed with glandular disks for climbing --- *Hyla*.

**COMMON TREE FROG**—Body stout, about 2 ins.; skin rough, warty; variable gray to brown or green, mottled with X patch on back, oblique band above and light spot beneath eye; hind leg 3 inches ----- *Hyla versicolor*.

**SPRING PEEPER**—Very small, 1 inch; hind leg 1.8 ins.; skin smooth, grey-green-reddish-brown or yellow, with V mark between eyes and faint X on back; fingers free of web; earliest frog; usually on or near ground — *Hyla crucifer* (*Hyla pickeringi*).

## REPTILES

The seasonal drying of sloughs on the prairies, and the scant rainfall, are conditions unsuited to amphibians and reptiles and consequently there are no lizards, and only two salamanders, two turtles and six snakes in Manitoba.

**SNAKES**—Are without legs, eardrums or eyelids. The scales are the chief guide to species—keeled or smooth, the number and color of rows, stripes, spots or blotches, the number and color of ventral and anal plates, form of head or neck constriction, if any, length and activity; oviparous or viviparous.

—**SERPENTES.**

**WESTERN HOG-NOSED SNAKE**—Tip of nose sharply turned up; scales keeled and rough looking; 23 rows, spotted; belly black, seldom over 2 feet; common on Great Plains and western Manitoba. *Heterodon nasicus*.

**COMMON HOG-NOSED SNAKE, PUFF ADDER, SPREADING ADDER, FLAT-HEADED ADDER**—Tip of nose not so sharply upturned; belly

not black except in young; scales keeled, 25 rows; some 28 dark blotches, tail ones forming rings and often mistaken for a Rattler because of this and its flat head during puffing sham; but is entirely harmless and “plays ‘possum” after puffing; to 3 feet long; most beneficial, feeding upon mice and gophers; oviparous, 18-24 sticky, adherent eggs.

—*Heterodon concortrix*.

**GARTER SNAKES**—Our commonest snake, with three yellowish stripes; scales keeled, 17 to 23 rows; head distinct; viviparous 35 or more, 7 inches long at birth. *Thamnophis*.

**PLAINS GARTER SNAKE**—Median stripe orange, lateral stripes yellowish, and on third and fourth rows up from ventrals, 21 rows of keeled scales; often three feet in length; western.

—*Thamnophis radix*.

**EASTERN GARTER SNAKE**—The Red River Valley type with side stripes on second or third rows of scales, but no red spots.

—*Thamnophis sirtalis*.

**RED-BARRED GARTER SNAKE**—The Great Plains type, with reddish spots on 2nd row from middle; 19 rows of keeled scales; greenish or bluish below; anal plate entire; woodland pastures; feeds on fish and frogs; as many as seventy young born in September. *Thamnophis sirtalis*; var. *parietalis*

**RED BELLIED SNAKE**—A small, but very active brown snake, with distinct head and neck, and red belly; 15 rows scales.

—*Storeria occipito maculata*.

**DEKAY'S BROWN SNAKE**—17 rows of brown scales and pink belly; viviparous, September, 3 ins. *Storeria dekayi*.

**GREEN SNAKE or GRASS SNAKE**—Uniform green above, lighter below; scales smooth, 15 rows; length 20 inches; oviparous; delicate shells; insectivorous. *Liopeltis vernalis*.

**TURTLES**—Covered by a ‘shell’ (shield) of bony plates; lateral extensions of the vertebrae, which are thus embedded and rigid, except those of the neck and tail. The horny epidermal plates distinct. Jaws, eardrums and eyelids like birds. No teeth. Oviparous, eggs hatched in sand. **TESTUDINATA.**

**SNAPPING TURTLE**—Head and neck large; jaws hooked and pointed; high in front; tail long, with crest of tubercles; plastron small and cross-shaped; Assiniboine River and its larger tributaries.

—*Chelydra serpentina*.

**PAINTED TURTLE**—Marginal plates with red stripes, sides and head with yellow pattern and plastron yellow; the common mud turtle of most slow streams throughout Manitoba.

—*Chrysemys picta*.

## BIRDS: AVES

Birds so outnumber other classes of vertebrates that they are usually omitted from manuals or keys of vertebrates. The classification of our ninety fishes, half dozen reptiles and sixty mammals is an easy matter compared with the identification of over three hundred birds. In this brief classification we can only deal with the salient characteristics of the orders and families, the taxonomic features of the genera and larger species; leaving the identification of the numerous small arboreal birds to handbooks and bird guides of which there are many excellent ones with color plates and other helps. The function of this general key is to call attention to the points to observe and to show the system upon which birds are classified. Like all other classes, Aves is divided into orders (ending in ES), families (ending in AE), and genera (ending in a, us, es, depending upon the sex concept in Latin). The species name will agree with the generic ending, but always without capital—*Fulica americana*. *Branta canadensis*.

The new arrangement and nomenclature of the American Ornithologist's Union Check-List of 1931 is here given and followed:—

**LOONS: GAVIIFORMES; GAVIIDAE.** **GREBES: COLYMBIFORMES; COLYMBIDAE.**  
**TOTOPALMATE SWIMMERS: PELICANS, CORMORANTS; PELICANIFORMES.**  
Pelicans: Pelecanidae; Cormorants: Phalacrocoracidae.  
**HERONS, IBISES: CICONIIFORMES.**  
Heros and Bitterns: Ardeidae.  
**SWANS, GEESE, and DUCKS: ANSERIFORMES.**  
Swans, Geese and Ducks: Anatidae.  
**BIRDS OF PREY: FALCONIFORMES.**  
Hawks, Eagles, Buzzards; Accipitridae; Falcons: Falconidae.  
tridae; Falcons: Falconidae.  
**GALLINACEOUS BIRDS: GALLIFORMES.**  
Grouse and Ptarmigans: Tetraonidae;  
Partridges and Quails: Perdicidae;  
Pheasants: Phasianidae; Turkeys: Meleagrididae.  
**CRANES, RAILS; GRUIFORMES.**  
Cranes: Gruidae; Rails, Gallinules, and Coots: Rallidae.  
**SHORE BIRDS, GULLS, AUKS: CHARADRIIFORMES.**  
Plovers, Turnstones: Charadriidae.  
Gulls, Terns Jaegers: Lari.  
Woodcocks, Snipe, Curlews, Sandpipers: Scolopacidae.  
Avocets and Stilts: Recurvirostridae.  
Phalaropes: Phalaropodidae.  
**PIGEONS and DOVES: Columbidae.**  
**CUCKOOS, ANIS, and AILLIES: Cuculidae.**  
**OWLS: STRIGIFORMES; Typical Owls: Strigidae.**  
**NIGHTHAWKS: CAPRIMULGIFORMES.**  
**SWIFTS and HUMMINGBIRDS: MICROPODIFORMES.**  
**KINGFISHERS and ALLIES: CORACIIFORMES.**  
**WOODPECKERS: PICIFORMES.**  
**PERCHING BIRDS: PASSERIFORMES.**  
Songless Perching Birds: Tyrranidae.  
Song Birds: Passeres.  
Larks: Alaudidae.  
Swallows: Hirundinidae.  
Jays, Magpies, and Crows: Corvidae.  
Chickadee: Paridae; Nuthatches: Sittidae.  
Creepers: Certhiidae; Wrens: Troglodytidae.  
Mockingbirds and Thrashers: Mimidae.  
Thrushes, Bluebirds, Solitaires: Turdidae. *robin*  
Kinglets: Sylviidae.  
Pipits: Motacillidae.  
Waxwings: Bombycillidae.  
Shrikes: Laniidae.  
Starlings: Sturnidae.  
Vireos: Vireinidae.  
Wood Warblers: Compsothlypidae.  
House Sparrows: Ploceidae.  
Meadowlarks, Blackbirds, Orioles: Icteridae.  
Tanagers: Thraupidae.  
Grosbeaks, Finches, Sparrows, and Buntings: Fringillidae.

## WATER BIRDS

**DIVERS**—Duck-like but with legs far back, standing nearly erect; sharp pointed bill without toothlike serrations; tarsus flattened; hind toe a lobe, flap or none; tail short or none.

—**GREBES, LOONS.**

—o—

**LOONS**—Large divers, 32 ins., with long, pointed bills; eyes large; no ruff or crest; feet fully webbed; neck striped, back mottled.

—**GAVIIDAE.**

**COMMON LOON: GREAT NORTHERN DIVER**—Head metallic black, also neck ring; back black, spotted white; female paler, dull slate

—*Gavia immer*

**RED-THROATED LOON**—Smaller, 24 ins.; head and neck striped gray with red throat patch; back uniform slate; more coastal than interior.

—*Gavia stellata.*

—o—

**GREBES**—Neck slender, erect; head tufted; no tail feathers; toes lobed, semi-webbed; claws broad, flat, rounded; wings short.

—**COLYMBIDAE.**

**WESTERN GREBE**—Our largest grebe, 27 ins.; dark slate above, satin white under half; head pointed, right-angle to long, slender, erect neck

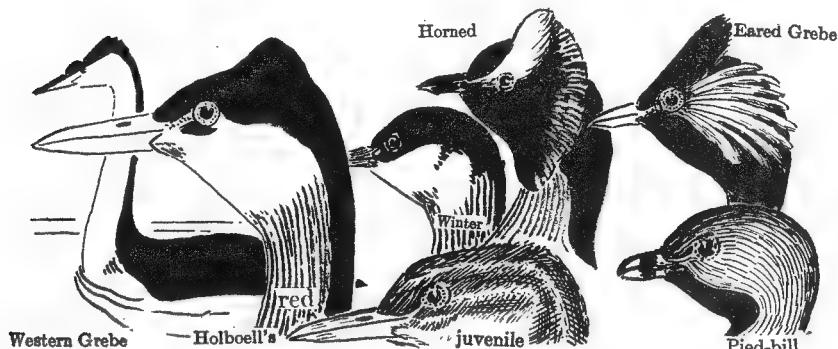
—*Aechmorphous occidentalis.*

**HOLBOEL GREBE: RED-NECKED GREBE**—19 ins.; black crest, white cheeks; throat chestnut red; two white wing patches in flight; raucous call

—*Colymbus grisegena holboeli.*

**HORNED GREBE**—13 ins.; ochre ear tufts (horns) metallic cheeks and ruff; chestnut neck and sides, gray and white in winter.

—*Colymbus auritus.*



**EARED GREBE: BLACK-NECKED GREBE**—13 ins.; high, black crest, golden ear plumes, no ruff; neck black, sides chestnut; bill slender, seems upturned

—*Colymbus nigricollis.*

**PIED-BILLED GREBE: DABCHICK**—Stout, blunt bill decurved, with black ring and throat patch; no ruff or crest; neck brownish gray, sides mottled

—*Podilymbus podiceps.*

✓  
✓  
**TOTIPALMATE SWIMMERS: PELECANIFORMES**

**CORMORANTS and PELICANS**—All four toes webbed; bill horny with gular pouch ----- *Steganopodes*.

**PELICAN**—Large, white divers with black wings, short squat neck and legs and large yellow throat pouch, suspended from a 12-inch bill, hooked at the tip and erect horny plate midway on upper bill; length over 5 feet, wing 22 inches; tarsus 4.5 ins.; flight, hunched neck and feet, six flaps and a glide; gregarious; flapping and sailing unison; nesting in large colonies (Reindeer Island); feed on fish, diving from air, or scooping during swimming ----- *Pelecanus erythrorhynchos*.

**DOUBLE-CRESTED CORMORANT**—36 ins.; black with small gular pouch; orange ear crests when present, curved forward; long, flexible neck; lights in trees; nests in great numbers along Pelican River; feeds on fish ----- *Phalacrocorax auritus*.

—o—  
**HERONS and BITTERNS: CICONIIFORMES**

**WADERS**—Long shanks; feet not palmate or webbed; hind toe large and level with others in herons and bitterns and small or missing in cranes. (Gruidae): ----- **HERODII: ARDEIDAE**.

**HERONS**—Long, slender neck, not poised upward in hiding; blue or white; tail feathers 12, long and stiff, long crest, **ARDEINAE**.

**GREAT BLUE HERON**—Long, black crest feathers in breeding season; plaited breast; 4 feet high; bill, 6 inches ----- *Ardea herodias*.

**BLACK-CROWNED NIGHT-HERON**—Bill shorter (3 ins.) and thicker; black, glossy green; young speckled brown resembling bittern ----- *Nycticorax*.

**BITTERNS**—Bill long, straight, pointed, fixed upward in hiding and watching; brownish ----- **BOTAUNINAE**.

**AMERICAN BITTERN: STAKE DRIVER: SHY POKE**—2 feet in length; sexes alike; young similar; tawny brown with striped breast; tail feathers 10, short ----- *Botaurus lentiginosus*.

**LEAST BITTERN**—Much smaller; 14 ins.; sexes unlike, male greenish, black above, buff on breast and wings ----- *Botaurus exilis*.

—o—  
**SWANS: GEESE and DUCKS: ANSERES**

**WHISTLING SWAN**—Neck longer than body; lores naked (Cygninae) body white; bill and feet black; nostril median.

----- *Cygnus columbianus*.

**GEESE**—Large; dull uniform color, mostly slate or white; sexes similar; shanks (tarsus) longer than middle toe without claw, and scaly all round ----- **ANSERINAE**.

**SNOW GOOSE**—Pure white except black primaries and tinge of red on head; young bluish; feet reddish; bill red and very stout, 2-5 ins.; western ----- *Chen hyperborea*.

**BLUE GOOSE**—Similar to Snow Goose, but bluish rump and wings, and grey-brown breast ----- *Chen caerulescens*.

**WHITE-FRONTED GOOSE**—Mottled forehead (lores) and tail coverts white; white patch at base of bill; feet yellow; western and B. C. ----- *Anser albifrons*.

**DOMESTIC GOOSE**—A European relative ----- *Anser anser*.

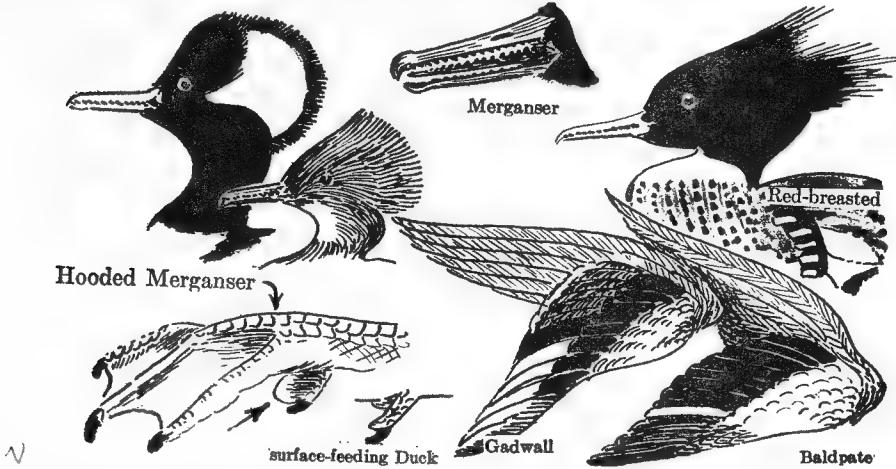
**CANADA GOOSE**—Head, tail, bill and feet black; cheeks white; body greyish-brown, paler beneath ----- *Branta canadensis*.

*Sub-class Aves*

*Order Anseres*

**DUCKS**

**DUCKS, GEESE and SWANS**—Sieve-billed swimmers, with broad, flat toothed bill and webbed feet ————— **ANSERES**.  
**DUCKS**—Smaller than geese, brighter colors and speculum, sexes differ.



**RIVER and POND DUCKS**—Broad flat bills, with straining margin plates; small hind toe, not lobed; gayly colored; "tippers".

—**ANATINAE**.

**MALLARD**—The wild prototype of domestic mallard; purple speculum with white margins; head greenish with white neck-ring.

**GADWALL or GREY DUCK**—Speckle-belly; large white speculum with black fore margin; wing coverts chestnut-red.

**BALDPATE: AMERICAN WIDGEON**—Speculum black, with white fore patch; no red on wings, but sides wine color and light forehead, western—B. C. to mouth of Mackenzie River.

**PINTAIL**—A large, beautiful duck with long slender neck and long, projecting tail feathers; speculum bronze-cinnamon; common on prairie sloughs; early and thrifty.

**SHOVELLER or SPOONBILL**—Colorful, green and white and brown; short neck; large head and long, broad, spatulate bill, overlapping; shallow prairie sloughs; late arrival; never feeds on land like mallards.

**WOOD DUCK**—Our most beautiful duck; green head with white streaks, and long drooping crest feathers; brown breast with white margin; speculum steel blue; purplish chestnut at base of tail; female with white eye ring and white below; woodland ponds and streams; nests in hollow trees, like goldeneye and mallard.

**GREEN-WINGED TEAL**—Our smallest duck and fastest flier; head brown with green band through eye to nape; green speculum; breast vinaceous, spotted with white bar on shoulder.

**BLUE-WINGED TEAL**—White crescent in front of eye, head ashy purple; wings grayish-blue; north of Great Slave Lake.

**DIVING DUCKS: Bay or Sea Ducks**—Compact divers; hind toe paddle-like; bill flat with flat nail at tip ————— **NYROCINAE**.

**CANVAS-BACK**—Largest of deepwater divers (Marila) with wedge-shaped nose; brick-red head and neck and white body band with pencilled wings and blackish breast and tail.

—*Nyroca valisneria*.

**REDHEAD**—Similar, but smaller, darker; rounder head.

—*Nyroca Americana*.

**BLUEBILL or SCAUP-DUCK**—Black front, white body, *Nyroca marila*.  
**GOLDEN-EYE, BUFFLE-HEAD and SCOTERS** are DIVING DUCKS.

**RUDDY DUCK**—Small, ruddy with blue bill and white cheeks.  
—**ERISMATURINAE.**

—o—

**FISH DUCKS**—Long, narrow “saw-bills” for holding fish; teeth pointing backward; hind toe, flat, rubber-like; head crested.  
—**MERGANSERS.**

**AMERICAN MERGANSER**—A large duck with long hooked bill, 2 ins.; breast and belly white; head and back greenish black; speculum white  
—*Mergus americanus.*

**RED-BREASTED MERGANSER**—Breast brownish; head black and scraggy crest, white ring around neck; rump and sides finely barred; speculum white; more common on large lakes.  
—*Mergus serrator.*

**HOODED MERGANSER**—High crest of black with white patch; sides rufous, with fine bars; the smallest merganser; edible.  
—*Lophodytes cucullatus.*

—o—

#### BIRDS of PREY: FALCONIFORMES

**BIRDS OF PREY**—Vultures, Hawks, Falcons, Eagles—Large, flesh-eating, with 4 strong talons and strong, hooked bill, cereated at base; females the larger  
—**FALCONIFORMES.**

—o—

**TURKEY VULTURE**—Head and neck bare and red, plumage black, bill long and less hooked, claws blunt and less hooked.  
—**CATHARTIDAE.**

—o—

**HAWKS and EAGLES**—Diurnal birds of prey  
—**FALCONES**

**FALCONS**—Long, pointed wings, swift, bold, strong mostly grey; upper mandible toothed  
—**FALCONIDAE.**

**Gyrfalcon**—Large, dark, winter visitor from north *Rusticolus falco*.

**Peregrine and Prairie Falcon**—Paler, smaller, occasional in summer.

**Pigeon Hawk**—Small, slate blue, no red.  
—*Falco columbarius*.

**Sparrow Hawk**—Small, red-brown with blue wings, insectivorous.

—o—

**FISH HAWK, Osprey**—Very large, eagle-like (23 ins.) brown above, white below; blue feet, scaly; head white with black ear cov-  
erts; monotypic  
—**PANDIONIDAE.**

—o—

**SHORT-WINGED HAWKS**—Wings, round, concave; tail long; flight heavy and low; usually brownish; mostly beneficial.  
Buzzards, Harriers and Eagles  
—**ACCIPITRIDAE.**

—o—

**GOSHAWK**—Large grey winter hawk, lighter beneath and barred.

**COOPER'S CHICKEN HAWK**—Medium size (16 ins.) *Accipiter cooperi*.

**SHARP-SHIN**—11 ins.; tail square or forked  
—**Accipiter velox.**

—o—

**BUZZARDS**—Large, heavily built, brown hawks, with broad wings and tail, no bars beneath, soaring high  
—**BUTEONINAE.**

Red-tail, Red-shoulder, Swainson's, Broad-wing, Rough-leg: *Buteo*.

**EAGLES**—Largest hawks (Buteoninae) 30 ins., and wing spread of 6 feet; tarsus densely feathered to base of toes  
—*Aquila.*

—o—

**MARSH HAWK**—The only long-winged, long-tailed, slender Harrier.  
—**CIRCINAE.**

Char. of game fowls will be  
Now plainer defined

### THE SCRATCHERS: GALLIFORMES

**GAME BIRDS**—True Fowl, Partridge, Grouse, Pheasants — Strong scratching feet; legs heavily feathered; bill short, horny and arched downward; wings short, and flight short to escape danger; “clutch” a dozen or more in ground nest; young precocial, active, cunning, hiding ----- **GALLI**.

**GROUSE**—Larger than partridge or quail, with more tail; tarsus feathered to toes; toes fringed with scaly snowshoes; nostril hidden in feathers ----- **TETRAONIDAE**.

**RUFFED GROUSE**—Broad, black ruff feathers on sides of neck; tail spreading fan-like, wrongly called partridge, **Bonasa umbellus**.

**SHARP-TAILED GROUSE**—Paler, with V-marks on breast; no ruff.

**PINNATED GROUSE**—Breast barred; tail square; stiff, pointed pinnae covering orange booming sacs on sides of neck, **Tympanuchus**.

**SPRUCE GROUSE**—Smaller, darker, percher, male has black throat with white margin and white patches; red crescent over eye; tail black with brown tip; white shafts on wing coverts; toes naked ----- **Canachites canadensis**.

**PTARMIGAN**—White in winter, mottled in summer; feathered toes.

**WILLOW PTARMIGAN**—Black tail, scarlet comb over eye in spring.

**HUNGARIAN PARTRIDGE**—Small but plump; compact, with short neck and tail; finely vermiculated reddish throat; abdominal patch and rufous brown tail ----- **Perdix**.

—o—

**RING-NECKED PHEASANT**—Male gayly colored with long pointed tail (15 ins.) and white neck-ring. Female ochre with brown, tail 8 ins. ----- **Phasianus colchicus torquatus**.

The Wild Turkey (*Meleagris gallopava*) is also a pheasant with the red, naked head and long showy tail, but never farther north than Iowa. ----- **MELEAGRIDAE**

—o—

### MARSH BIRDS: (Paludicolae) GRUIFORMES

**CRANES**—Fly with outstretched necks; lores bare; bill shorter, blunt. ----- **GRUIDAE**.

**WHOOPING CRANE**—Pure white except black primaries, bill and feet; stand 4 feet high plumes 10 ins. ----- **Grus americana**.

**SANDHILL CRANE, Brown Crane** — Head brown, naked or hairy; wrongly called Wild Turkey ----- **Grus mexicana**.

—o—

**RAILS, GALLINULES and COOT**—Small runners (coot, a swimmer); precocial; dark color; wings and tail very short; active.

**KING and VIRGINIA RAILS**—Bill slender, decurved, longer than head. ----- **Rallus**.

**SORA RAIL**—Small, bill stout, straight, not sensitive at tip, **Porzana**.

**GALLINULE**—Purple or black; horny shield on lores; feet greenish. ----- **Gallinula chloropus**.

**COOT: MUD HEN**—Black; swimmer, toes lobed with broad flaps.

----- **Fulica americana**.

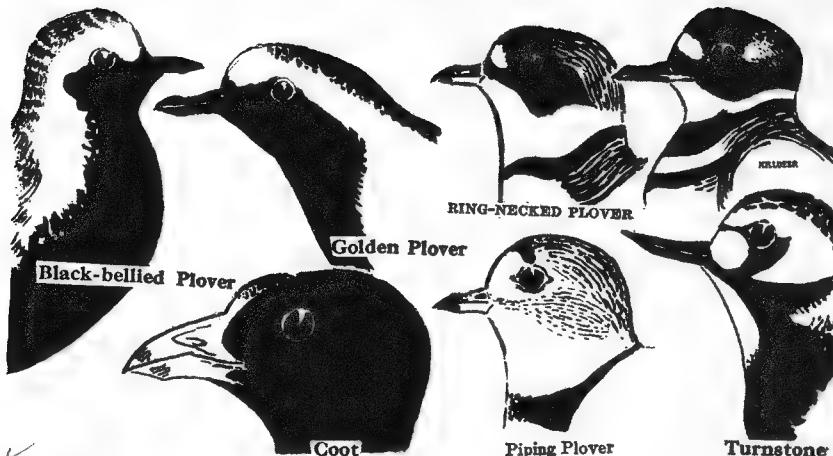
—o—

### SHORE BIRDS, Gulls, Auks: CHARADRIIFORMES

**SHORE-BIRDS**—Phalaropes, Avocets, Snipes, Plover—Legs, long, slender; tibia naked; head round, bill slender, flexible, sensitive at tip; precocial; neck rusty red, white beneath, **LIMICOLAE**.

Now—**CHARADRII**.

## PLOVERS



**PLOVERS**—Plumper than snipes, bill shorter, tip horny; no hind toe; black blotches on head or breast or neck rings —*Charadriidae*.  
 Head large, globose; bill like pigeon, with horny tip; soft, slit nostril; wings long — **CHARADRIIDAE**.

**BLACK-BELLIED**—Male black in front, white crown and back of neck. Length, 11 inches.

**GOLDEN**—Similar, but black crown, grey axillars and no trace of hind toe. — *Pluvialis dominica*.

**KILLDEER**—Double neck bands and buff rump; L. 6 3-4 inches.

**PIPING PLOVER**—White crown, no black bar through face; legs and base of bill yellow — *Charadrius melanotos*.

### SHOREBIRDS: CHARADRII

**SNIPES**—Tarsus (shanks)—Scutellate in front; bill slender, tip soft and sensitive or movable. Tip-ups, Teeters, Peeps Sandpipers. —*SCOLOPACIDAE*.

**WOODCOCK**—Eyes large at top of angular head; bill 3 ins.; mottled brown with black bands on head; zigzag hops and flight; showing white on rear tail spread — *Philohela*.

**WILSON'S SNIPE**—Tall, 10 ins.; mottled black and brown; sides barred — *Capella delicata*

**CURLEWS**—Very long soft bill, decurved; tarsus scutellate in front. —*NUMENIINAE*.

✓ **Hudsonian Curlew**—Bill 3-4.5 ins. long. — *Phaeopus hudsonicus*.  
**WILLET**—Large, grey wader, 15 ins.; white underneath and rump, white bar on wings.

**UP-LAND PLOVER**—Tall (12 ins.) brownish, field bird—*Bartramian Sandpiper*.

**YELLOW LEGS**—Slender, graceful wader; incessant nodding, black and white mottled — *Totanus*.

**SOLITARY SANDPIPER**—Smaller, darker with brown spots and barred axillars — *Tringa*.

**SPOTTED SANDPIPER**—Round spots on breast (adult) brownish. Teeter — **TIP-UP**.

**SANDPIPER**—Eyes forward; upper beak thin, sensitive; eclipse plumage — **CHALIDRINAE**.

**GODWITS**—Large, mottled-brown waders, long bill, upturned, not grooved — *Limosa*.

**Marbled**—Tail barred; breast buff; primaries marbled.

**Hudsonian**—Tail black; breast reddish; primaries dark, white rump

July 1940 - 100 species

and a few others

**DOWITCHERS**—Bill straight  $2\frac{1}{2}$  ins. swollen and pitted at tip; breast brick red ..... **ROBIN SNIPE**.

**LEAST SANDPIPER**—Very small; toes unwebbed; legs green. —*Pisobia minutilla*.

**SIMIPALMATED<sup>D</sup> or Black-Legged PEEP**—Small; toes webbed at base. —*Ereunetes pusillus*.

**SANDERLING**—No back toe; no cross bars on tail; reddish neck in spring, white in fall ..... *Crocethia alba*.

—o—

**AVOCET**—Tall, 18 ins.; long, slender bill up-turned (?); neck white with brown; legs long, blue. ..... **RECURVIROSTRIDAE**.

—o—

**PHALAROPE**—Toes lobate like coot; tarsus flat, **PHALAROPODIDAE**.

—o—

**GULLS and TERNS**—Long-winged swimmers; tail well developed; feet webbed; hind toe small, elevated; color, mostly white with bluish gray above; sexes alike; altricial; bill slender, slightly hooked ..... **LARIDAE**.

**HERRING GULL**—Large, white gull with gray wings with black primaries; juveniles mottled buff all over; our largest gull, 24 ins.; bill yellow; feet flesh color; arrives April 20. —*Larus argentatus*.

**RING-BILLED GULL**—20 ins.; black ring near tip of bill; legs yellow. —*Larus philadelphicus*.

**FRANKLIN GULL**—Black head and wing tips; red bill and feet. —*Larus franklini*.

**BONAPARTE'S GULL**—Black bill; most of primaries white—nest unknown. See drawing — *Larus philadelphicus*.

**TERNS**—Bill not hooked, mandible even; tail deeply forked **Sterninae**.

**COMMON TERN**—Black cap or face patch around nape of neck; bill red with black tip; tail forked 3:1; outer tail feathers dark on outside ..... *Sterna hirundo*.

**FORSTER'S TERN**—Tail fork 4:1, longest shaded on inside; silver gray below. See drawing ..... *Sterna forsteri*.

**BLACK TERN**—Smallest tern, 10 ins.; sooty gray to black head and underparts; tail only slightly forked, outer feathers broad and rounded.



**PIGEONS or DOVES**—Bill straight, compressed, horny tip and soft, tumid cere at base, covering nostrils; head small; feet small and weak; feathers soft and loosely inserted; altricial; monogamous ..... **COLUMBIDAE**.

**DOMESTIC PIGEON**—From Rock Dove of Europe, *Columba aenae* L.

**PASSENGER PIGEON**—Extinct since 1900 ..... *Ectopistes migratorius*.

**MOURNING DOVE**—A small pigeon, with a long-pointed tail, like the Passenger Pigeon, but duller in colour, *Zenaidura macroura*.

## ODD FAMILIES Between WATER BIRDS and TREE BIRDS

**NOTE**—Between the large birds of prey and the small insectivorous and song birds, (for which we have no suitable group name) there are a few transitional types of uncertain classification—hind toe small, if any; wing coverts large and numerous; ten primaries; ten tail feathers; sternum notched .. **PICARIAE.**

**CUCKOOS and KINGFISHERS**—Sternum, notched behind; only two syringeal muscles; legs short; toes yoked ----- **COCCYGES.**

**CUCKOO**—Toes, 2 forward, 2 back, weak, yoked; bill curved and pointed; plumage, soft and thin, tropical; tail long and tapering, Fig. 72 ----- **CUCULIDAE.**

**OWLS—Nocturnal Birds of Prey**—Facial dish or feather rings about the eyes, covering large ear tympanum; feathers soft, flight silent ----- **STRIGES.**

**SWIFTS, NIGHTHAWKS and HUMMING BIRDS**—Another diverse A. O. U. group, with very long, pointed wings and primaries; small, weak feet ----- **MACROCHIRES.**

**GOATSUCKERS**—Bill short, broad and gaping, deep and wide, with rictal bristles for scooping insects ----- **CAPRIMULGIDAE.**

**Whip-poor-will**—Mouth bristles very long; tail rounded, Fig. 93.

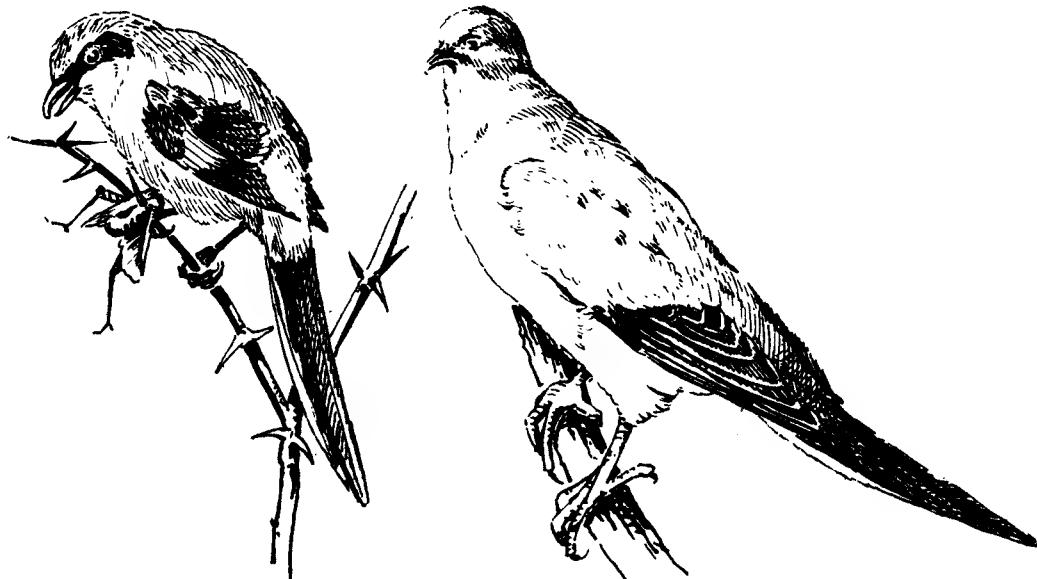
**Night Hawk**—White throat; white spot on wing, tail forked, Fig. 92.

**CHIMNEY SWIFT**—Wide gape and long, thin, pointed wings like swallow but secondaries very short, primaries, 5 ins., bowed backward; feet small and weak; large salivary gland **MICROPIDAE.**

**HUMMINGBIRD**—Long, slender, suctorial bill; protrusible tongue; wings long and pointed, only ; secondaries; feet small, sharp claws.

**Fig 84 — TROCHILIDAE.**

**KINGFISHER**—Toes, yoked, 3 forward, 1 back; bill straight, longer than large, crested head; tarsus very short; neck short, squat; slate blue and white (belted) Fig. 98 ----- **ALCEDINIDAE.**



Loggerhead Shrike

Passenger Pigeon, Extinct since 1898  
Page 19

Chap. 11. Woodpeckers  
Chap. 12. Thrushes  
Chap. 13. Swallows

Chap. 14. Larks

Chap. 15. Vireos and Thrushes

## WOODPECKERS and PERCHERS

**WOODPECKERS**—Chisel bill; protrusible, barbed tongue; hyoid curved round the skull; strong, hooked claws, 2 forward, 2 back; tail bristles for bracing against bark. Figs. 94, 96, 97, 102, PICIDAE.

**PERCHING BIRDS**—Over half of all birds, about two hundred in Manitoba ----- PASSERIFORMES.

**KINGBIRDS, FLYCATCHERS, PHOEBE and PEWEE**—Songless, insectivorous; longest first primary of passerine birds; bill broad, flat, triangular, hooked and notched at tip; snaps, catching insects; long rictal bristles; nostrils small, concealed; plumage olivaceous ----- TYRANNIDAE.

**KINGBIRD**—White breast; black back and tail tipped with white.  
Fig. 100 ----- *Tyrannus tyrannus*.

**ARKANSAS KINGBIRD**—Yellow breast and underparts; tail not white tip ----- *T. verticalis*.

**CRESTED FLYCATCHER**—Like above, but back and tail brownish; no orange crown-spot, Fig. 103.

**LEAST FLYCATCHER**—Half size, smallest of olive tyrants; wing 2.5 ins., Fig. 105.

**PHOEBE**—Olive above, white below; head high and darker; song—“fee-bee”, Fig. 104.

**PEWEE, Eastern Wood Pewee**—Wings longer than fixed tail; sides dark; wing bars, Fig. 101.

**SONG BIRDS (Oscines)**—With highly-developed syrinx with five pairs of song muscles attached to top of bronchial rings.

Mostly small, arboreal perchers, alert, intelligent; nests well-made, altricial ----- PASSERES.

**CROWS, MAGPIES, JAYS, RAVENS** ----- CORVIDAE.

Largest of the Oscines, highly colored, raucous, and audacious, mischievous, cunning, hardy; bill long, strong, arched; nostril covered with bristly tufts; omnivorous; crude nest of sticks, eggs bluish-green with brown spots.

**Crows and Ravens**—Tail much shorter than long, pointed wings, Fig. 89 ----- Corvinae.

**Jays and Magpies**—Tail longer than short, rounded wings, Figs. 77 and 87 ----- Garrulinae.

**BLACKBIRDS, COWBIRDS, ORIOLES, MEADOWLARKS**—Figs. 79 and 86 ----- ICTERIDAE.

Mostly gregarious, highly-colored, hardy; insect and seed eaters (except Orioles); legs, stout, walkers; bill mostly long and pointed Figs. 79 and 86.

**BOBOLINK: RICEBIRD**—Finch-like bill; long claw on midtoe; tail feathers pointed, Fig. 85 ----- *Dolichonyx oryzivorus*.

**COWBIRD**—Metallic black with brownish head; sparrow bill, Fig. 83.

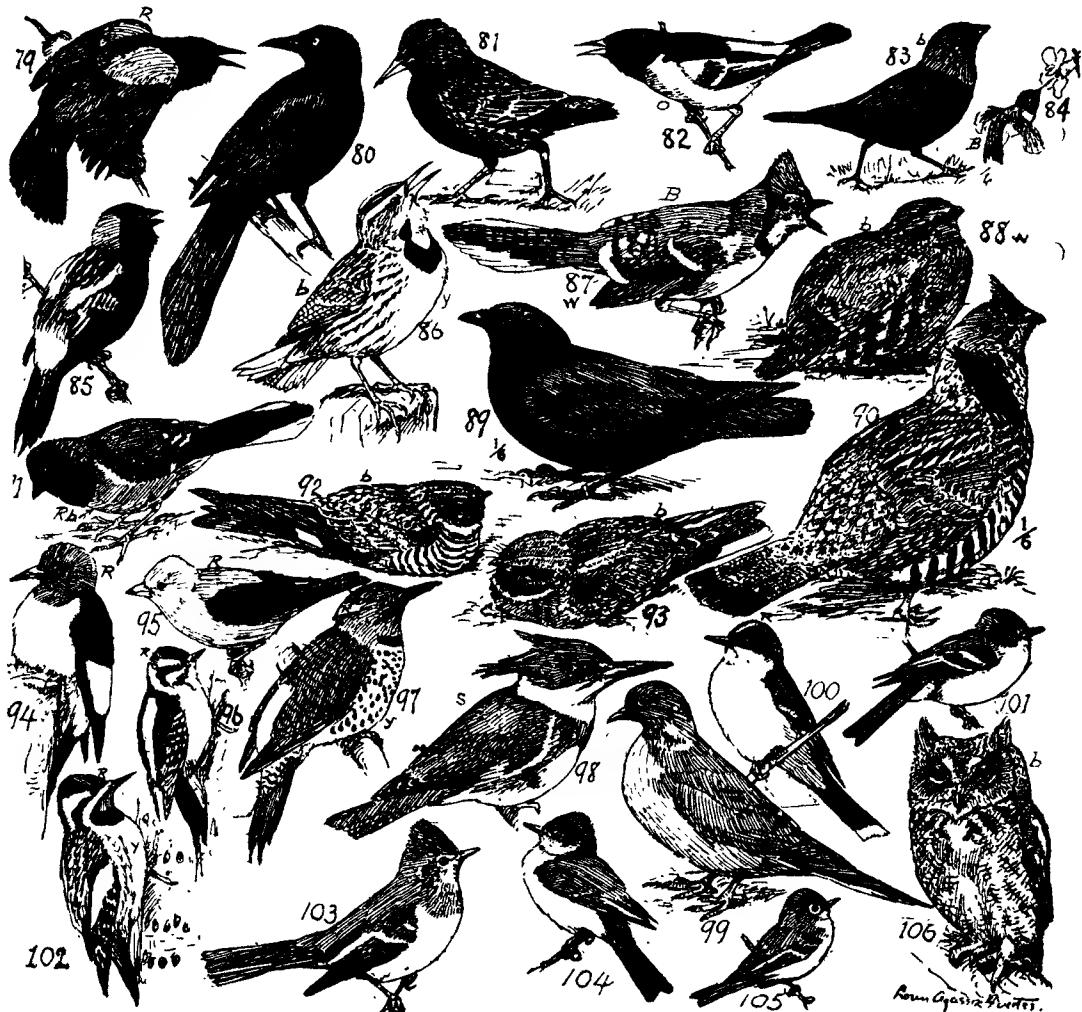
**RED-WING and YELLOW-HEAD**—Similar in habits, associate, Fig. 79.

**MEADOWLARK**—Tail short; bill slender, pointed; yellow breast with black crescent, Fig. 86.

**ORIOLE**—Tail long; sexes unlike, male orange and black; hanging nest, Fig. 82.

**GRACKLES**—Bill, stout, decurved; metallic black; tail long, Fig. 80.

**STARLING**—Introduced European; metallic purple and green with buff tips; yellow; tail short; struts Sturnidae-*Sturnus vulgaris*.



**BLACKBIRDS**, mostly black, large feet for walking, feed on or near ground.

79 Red-winged Blackbird, 9.5", scarlet shoulder edged with yellow; "Jub-i-lee."  
 80 Purple Grackle, 12", iridescent, iris yellow, tail longer than wings, Squeaks.  
 81 **STARLING**, 8.5". green, spotted, yellow bill, tail shorter than wings, reported.  
 82 Baltimore Oriole, 8", "Golden Robin," black head, wings and tail, nests hang.  
 83 Cowbird, 8", brown head and neck, iridescent, eggs in other birds' nests; squeaks.  
 85 Bobolink, 7", black body, yellow nape, white rump, meadows, sings as it flies.  
 86 Meadowlark, 10.75", brown; yellow breast with black crescent; "Spring of yee'ah."  
**CROW FAMILY**, partly carnivorous, noisy, nests of sticks, eggs mottled.  
 77 Magpie, 20", black and white tail, 10", western scavenger, cruel.  
 87 Blue Jay, P 11.5", blue with black bars on tail and wings, black collar, crest "ay-y."  
 89 American Crow, 18", purplish tings, tail not pointed, has sentinels; "caw."  
 Canada Jay, 11.5", dirty gray, lighter below, loose, fluffy, bold, winter Whiskey Jack  
 88 Hungarian Partridge, 12.5", compact, brown throat and tail and belly patch.  
 90 Ruffed Grouse, 17", black ruff on neck; broad, barred tail; spotted rump patch.  
 91 Towhee, 8", "Ground Robin," black head and back; brown sides, "Chewink, To-wee."  
 91 Towhee, 8". "Ground Robin", black head & back; brown sides, "Chewink", "To-wee."  
 92 Nighthawk, 10", mottled, white outer tail, black chin, mouth bristles, whistles.  
 93 Whip-poor-will, 10", mottled, white outer tail, black chin, mouth bristles, whistles.  
 94 Red-headed Woodpecker, 8.5", crimson head, black above, white below and rump.  
 95 Scarlet Tanager, 7.5", scarlet, wings and tail black, robin with cold, "Chip Cree."  
 96 Downy Woodpecker, 6.5", black and white stripes, red spot on head, white below.  
 97 Flicker, 1.25", brown with black bars, yellow lining, white rump, crescent and spots.  
 98 Kingfisher, 12", blue above, white below, banded breast, crest, bill long, rattles.  
 100 Kingbird, 8.5", black above, light gray below, tip of tail white, chases crows.  
 101 Wood Pe wee, 6.5", olive-brown, white ring and bars, bill black, "pee-a-wee."  
 102 Yellow-bellied Sapsucker, 8.5", crown and throat red, black chest band, white marks.  
 103 Crested Flycatcher, 9", olive-gray above, yellow, below, snake skin in nest, "quep."  
 104 Phoebe, 7", olive-brown, whitish below, near water, tail twitches, "phee-be."  
 105 Least Flycatcher, 5.5", gray, white eye-ring and bars, tail forked "Chebec."



**THRUSHES, dull brown, spotted breast, hop, feed on ground, singers.**

- 1 American Robin, 10", dark head, chestnut breast, yellow bill, lawns, carols.
- 2 Veery or Wilson Thrush, 7.5", reddish brown above, faint breast marks.
- 3 Hermit Thrush, 6.75", reddish brown tail, yellow eye ring, ascending song.
- 4 Bluebird, 7", blue above, brown breast, orchards, sings "purity" as flies.
- 5 Wood Thrush, 8", reddish brown above, black spots white eye ring, aeoli.
- 6 White-breasted Nuthatch, 6", black crown, gray back, climbs down, short tail.
- 7 Chickadee, 25.5", black cap and throat, gray back, "phebe, chick-a-dee-dee."
- 8 Brown Thrasher, 11.5", red-brown back, spotted, white breast, repeats song.
- 9 Catbird, 9", mostly gray, crown and tail black, bushes, rigmarole and "Mews".
- 10 Mockingbird, occasional, 10.5", gray above, breast and outer tail white, vocalist.
- 11 House Wren, 4.75", brown above, barred wings, tail, bubbling song.
- 12 Red-breasted Nuthatch, 4.5", black crofn, gray back, not common, "vank."
- 13 Golden-crowned Kinglet, 4", crown patch bordered with black, chips.
- 14 Ruby-crowned Kinglet, 4.25", crown patch inconspicuous, evergreens.
- 15 Brown Creeper, 5.5", climbs up spirally, sharp-curved bill, long tail.
- 16 Marsh Wren, 3.5", Cinnamon, short, erect tail, long bill, black crown, shy.

**VIREOS, 5.5", or more, olivaceous backs, white beneath, come last of May.**

- 15 Red-eyed Vireo, 6", yellow sides, white below, white line to eye, no wing bars.
- 16 Yellow-throated Vireo, 6", yellow throat and belly, and line to eye, white bars.
- 18 Warbling Vireo, 5.5", dull yellow beow, white throat and belly, no wing bars.
- 20 Back and White Warbler, 5", black and white stripes, creeps up limbs, tse 7x's.
- 21 Blackburnian Warbler, 5.5", throat orange, crown orange stripes, black and white.
- 22 Magnolia Warbler, 5", rump and below yellow, black back, necklace and mask.
- 23 Black-throated Blue Warbler, 5", black sides, white beneath, outer tail, on wing.
- 24 Black-throated Green Warbler, 5", black and crown yellow, zee 6 x's, lowering 5th.
- 25 Pine Warbler, 6", yellow below, olive above, two white wing bars, song like Chippy.
- 26 Palm Warbler, 5.5", yellow below, chestnut side-streaks, white spots outer tail.
- 27 Orange-crowned Warbler, 5", yellow below, black stripes on side, bushes, "Zee.Zee."
- 28 Chestnut-sided Warbler, 5", throat and breast white, yellow crown, black moustache.
- 30 Myrtle Warbler, 5.5", rump, crown and sides yellow, slate streaked with black.
- 31 Yellow Warbler, 5", golden-yellow, breast streaked with cinnamon, see-wee 7 x's.
- 33 Bay-breasted Warbler, 5.5", throat and sides chestnut, brown crown, black mask.
- 34 Black-poll Warbler, 5.5", black and white, black crown, does not creep.
- 35 Wilson Warbler, 5.5", olive yellow above, yellow below, back cap, simple trill.
- 36 Canadian Warbler, 5.25", yellow breast, black necklace, gray back, canary-like,
- 38 Maryland Yellow-throat, 5.5", yellow below, olive, black mask, swamps "witchity."
- 32 Cape May Warbler, 5", yellow breast with black stripes; chestnut cheek patch.

## THRUSHES: VIREOS: WARBLERS

**THRUSHES: ROBINS: BLUEBIRDS**—Medium-sized ground birds; brown above (or blue) with spotted stripes on white breast, at least when young; adult robins and bluebirds have reddish brown breast but young spotted; tarsus booted; rictal bristles; primaries ten, first short; sexes similar; migratory; sweetest singers, conceded highest rank, Figs 1-5 ----- **TURDINAE**.

**THRUSHES**—Brown above, white below, with broken stripes on breast; bill wide at base, Figs. 2, 3, 4, 5----- **Hylocichla**.

**ROBIN: AMERICAN REDBREAST**—Olive gray above; head and tail blackish; throat white with black streaks; chestnut brown below ----- **Turdus migratoria**.

**Bluebirds**—Blue above; wings long and pointed; Fig. 4 ----- **Sciala**.

**EASTERN BLUEBIRD**—Dark blue above, reddish brown below, 4. ----- **Sciala scialis**.

**MOUNTAIN BLUEBIRD**—Light sky-blue above and below; western but nests in Manitoba as far east as Sidney **Sciala currucoides**.

**TOWNSEND'S SOLITAIRE**—A rare visitor from the Rockies; a gray bird with tawny spots on primaries, and white outer tail feathers; tail as long as wings; bill short, depressed; monotypic, ----- **Myadestinae**.

**VIREOS**—Small, warbler-like, but larger and notched bill; yellowish-green tinge, uniform, Fig. 15 and 19 ----- **VIREONIDAE**.

**WARBLERS**—Over thirty small, arboreal, insectivorous migratory birds of the tree-tops; many brightly colored, mostly yellow. Figs. 20 and 47 ----- **COMPSOTHYPIIDAE**.

**MOCKERS and THRASHERS**—Slender birds of musical ability.

Fig. 8, 9, 37 ----- **MIMIDAE**.

**CATBIRD**—Slate-grey; long tail; chestnut patch underneath, Fig. 9.

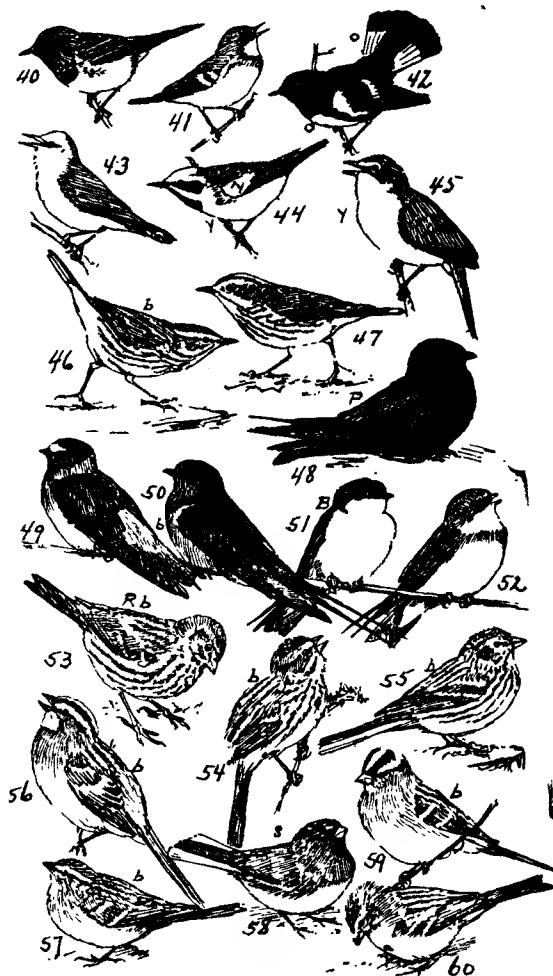
**BROWN THRASHER**—Reddish-brown above, white and striped below. Fig. 8.

**WRENS**—Closely related to Mimidae, but smaller, alert, aggressive. Figs. 13 and 17 ----- **TROGLODYTIDAE**.

**BROWN CREEPERS**—**Chickadee and Nuthatches**—Related, birds of the tree trunk. Figs. 6, 7, 10 and 14.

**KINGLETS**—Are Sylviidae or Old World Warblers. Figs. 11 and 12.





40 Mourning Warbler, 5.5", yellow below, gray head and breast, swamps, rare.  
 41 Parula Warbler, 4.5", slate above, yellow throat, brown breast band, 2 white bars.

42 American Redstart, 5.5", orange on side, wing, tail, black above, che-che-che-oo.

45 Yellow-breasted Chat, 7.5", yellow breast, olive back, gray head, white over eye.

46 Water Thrush, 6", yellow tinge with stripes below, olive above, wags tail.

47 Ovenbird, 6" orange crown, green back, spotted breast, ground. "Teacher."

**SWALLOWS**, birds of air, long wings, small feet, broad head, twitter.

48 Purple Martin, 7.5", bluish purple, iridescent, forked tail, sweet song, noisy.

49 Cliff Swallow, 5.5", steel blue above, white below, buff forehead and rump.

51 Tree Swallow, 6", iridescent above,

white underneath, short square tail.

52 Bank Swallow, 5", mouse color, white below, brown breast-band, clay banks.

**SPARROWS**, dull brown and streaked, with large beak, seed-eater

53 Fox Sparrow, 7", red brown rump and tail, flocks, hops, brush land, and swamps.

54 Song Sparrow, 6.25", brown stripes on breast, dark spot in front, 3 notes.

55 Vesper Sparrow, 6", upper mandible and shoulder brown, white outer tail.

56 White-throated Sparrow, 6.75", black and white striped crown, "Pea-be-dy."

57 Chipping Sparrow, 5.25", brick top, gray below, white line over eye, rapid chips.

58 Junco, 6.5", slate head, back and bib; white outer tail, beak and below; trills.

59 White-crowned Sparrow, 6.75", white crown edged with black, occasional.

60 Tree Sparrow, 6", brick top, gray below, dark breast spot, upper bill black.

**SWALLOWS**—Figs. 48 and 52—Pointed, overlapping wings, forked tail; swift fliers; gregarious; mostly metallic blue; small feet; short bill, wide gape **HIRUNDINIDAE**.

**PURPLE MARTIN**—Largest swallows; in colonies, social, chatters (48).

**BARN SWALLOW**—Reddish-chestnut below and lores; long forked tail.

**TREE SWALLOW**—White below, metallic black above. (51)

**CLIFF SWALLOW**—Face chestnut with white forehead bar; breast white; rump tan. (49)

**WAXWING**—Cinnamon-drab with high crest and black face bar, Fig. 73; glossy red tips on secondaries; tail tipped with yellow; no season changes **BOMBYCILLIDAE**.

**BOHEMIAN**—Winter wanderer, larger, with wing bars; gregarious.

**CEDAR**—Late summer, smaller; no wing bars; crissum white; shy.

**SHRIKES; Butcher-birds**—Raptorial, with hooked bill black face bar, wing patch and crissum, blue-grey above, white, below. **LANIIDAE**.

**NORTHERN**—Winter visitor, larger, with wavy lines below, Fig. 71.

**LOGGERHEAD or WHITE-RUMPED**—No wavy lines below; summer migrant, Fig. 19. **Lanius ludovicianus**.



61 Pine Siskin, 5", brown and gray above, yellow tinge to tail and wings, canary.  
 62 American Goldfinch, 5", black cap, wings, tail; white wing bars, canary-like call.  
 63 Indigo Bunting, 5.5", deep blue, feeds on ground, sings from tree top, "tshe" 4 times.  
 64 Purple Finch, 6", Harvard crimson (not purple), melodious whistle from tree tops.  
 65 Redpoll, 5.25", redcap, rosy breast, gray and brown streaks, black chin, canary.  
 66 Pine Grosbeak, 9", gray or rose with wings and tail brown, eat buds and berries.  
 67 American Crossbill, 6", brick red, wings and tail darker, feeds in evergreens.  
 68 Rose-breasted Grosbeak, 8", black head and back, white belly, rump, deep carol.  
 69 Evening Grosbeaks, 8", yellow with black head and wings, stout, eats maple seeds.  
 70 Northern Shrike, 10", hooked beak, wings, tail black with white tip.  
 71 Black-billed Cuckoo, 12", light cinnamon, white tips on outer tail, "ku-ku-ku."  
 72 Cedar Waxwing, 7", brown-gray, yellow tip to tail, crested, black mask.  
 73 Field Sparrow, 5.5", pink beak, red-brown back, pasture, ascending, ends in trills.  
 74 Bohemian Waxwing, 8", same as Cedar Waxwing, but Winter visitor.  
 75 Horned Lark, 7.75", ear tufts, yellow throat, black crescent.  
 76 Swamp Sparrow, 5.9", no breast spot, no streaks, no wing bars, reddish crown.  
 77 Magpie, 15", tail 10", greenish black, with white shoulder and girdle.  
 78 Snowflake, 7", black and white, winter plumage brownish, likes snow, twitters.

**PRAIRIE HORNED LARK** A true lark with the long hind claw; tarsus scutellate; bill slender; nostril concealed; first primary obsolete; secondaries long; our only lark — **ALAUDIDAE**.

—Skylark—*Alauda arvensis*.

**FINCHES, GROSBEAKS, SPARROWS, BUNTINGS—FRINGILLIDAE.**

argest bird family (550 sp.) over forty in Manitoba; plump, compact, seed-eaters, with short, stout, conical bill, angulated at base, nostril high; primaries 9, first obsolete. Figs. 53, 78.

**Grosbeaks, Buntings and Cardinals**—Largest of finches, arboreal, migratory or winter wanderers; brightly-coloured, Cardinal, 68, Rose-breasted, 69, Indigo 63, Lazuli Bunting.

**Purple Finch, Goldfinch, Redpoll and Crossbill** — **Carduelinae.**  
Mostly winter birds, medium size, red or yellow.

**Goldfinch and Pine Siskin**—Small, wing 3 ins.; tail forked, yellow, Figs. 61 and 62 — **Spinus.**

**Tree Sparrows**—Many songsters, streaked with brown.

**Ground Sparrows**—Longspurs, Junco and Snow Bunting, Vesper (55) Savannah, Bairds, Grasshopper, Lecontes, Harris, White Throat (56) Slate-colored, Song (54) and Swamp Sparrow (76) and Towhee (Ground Robin) (91) — **Emberizinae.**

## MAMMALS

### Key Based on Teeth and Feet

Full set of fine, pointed teeth (32-44); small, mouse-like, INSECTIVORA.

Fore feet large, spade-like for digging; mammae abdominal, MOLES.

Fore feet weak, small; body slender; nose pointed; fur silky.

### —SHREWS.

Fore limbs webbed for flying; mammae pectoral.

### —BATS: CHIROPTERA.

Carnassial teeth, with long canines and sharp claws; predatory flesh-eaters

### —CARNIVORA.

Feet plantigrade, heel tracks, claws not retractile, omnivorous.

Tail short; large heavy body; hibernate

### —BEARS: URSIDAE.

Tail long, bushy, ringed; feet small; nocturnal.

### —RACCOON: PROCYONIDAE.

Feet digitigrade; four toes on hind feet; runners.

### —WOLVES, FOXES: CANIDAE.

Feet padded, claws retractile, 4 behind; stealthy hunters.

### —LYNX: FELIDAE.

Feet small, toes 5-5; slender, quick fur animals, scented.

### —MUSTELIDAE.

Herbivores with few teeth (16-32), no canines, broad grinding molars.

Gnawing incisors, 2-2 bent, chisel-like, red, exposed. —RÖDENTIA.

Extra upper incisors (B. Fig. 5); lateral jaw motion LAGOMORPHA.

Split-hoof cud-chewers (Ruminants); horns. —ARTIODACTYLA.

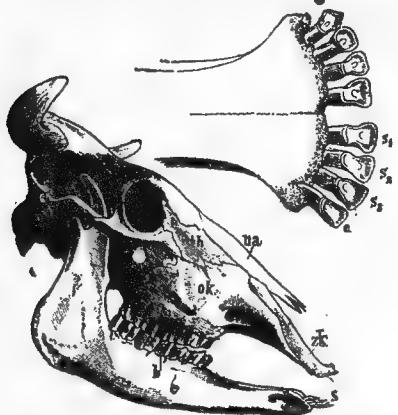


FIG. 4.—Skull and front of lower jaw of Cow.

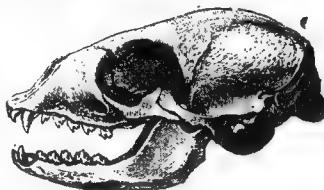


FIG. 6.—W.



*M. inciferus.*



*M. subulatus.*



FIG. 7.—BAT.



*noctivagans.*



*E. fuscus.*



*L. borealis.*



*L. canescens.*

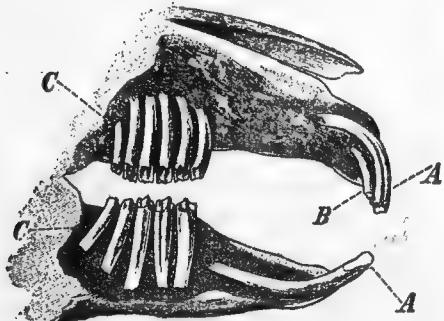


FIG. 5.—RABBIT.

*A, B, incisors; C, molar.*

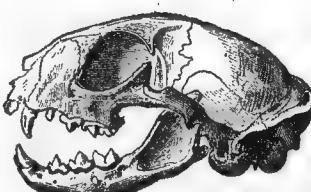
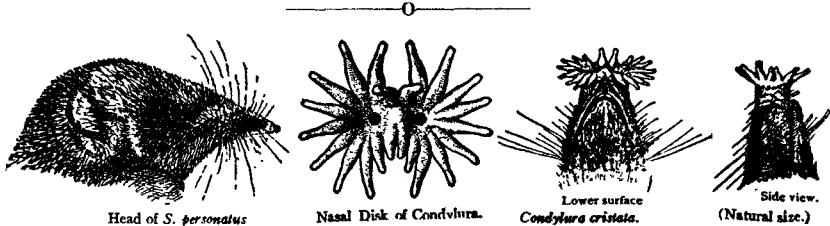


FIG. 8.—CAT.

## INSECTIVORA

### MOLES: TALPIDAE

**STAR-NOSED MOLE**—Our only mole, found only east of Winnipeg River, muskegs; three specimens from Manigotagan, one from Pine Falls; 6.5 ins.; 44 teeth; snout with 22 processes radiating from nostrils *Condylura cristata*.



### SHREWS: SORICIDAE

**SHREWS**—Smallest of mammals yet carnivorous, voracious and fierce; do not hibernate; attack mice; body slender; snout long, pointed; eyes and ears developed; feet small, toes 5-5, slender; fur silky; teeth fine, 32, canines 1-0 *SORICIDAE*.

**COMMON SHREW**—4 ins.; tail 1.5; buff-brown, *Sorex cinereus haydeni*.

**RICHARDSON'S SHREW**—Dark band down back; tricolor; ears small. *Sorex richardsonii* Bachman, 1837, now *S. Arctius* Jackson.

**HOY'S SHREW**—3 ins., 1 in. tail; smallest shrew; rare; brown, bicolor. *Microsorex hoyi*.

**MARSH SHREW**—6 ins.; hind feet fringed for swimming, slightly webbed *Neosorex palustris*.

**SHORT-TAILED SHREW: MOLE SHREW**—Body stout; ears hidden; dark brown; 5 ins. tail 1 in.; teeth brown-tipped; eastern. *Blarina brevicauda*.

## CHIROPTERA

**BATS**—Flying insectivores; fingers greatly elongated and webbed, including the hind legs and tail within interfemoral membrane; knee bends backward for hanging head downward; ears large with tragus; sternum keeled; mammae pectoral (2-4); crepuscular *VESPERTILIONIDAE*.

**LITTLE BROWN BAT**—3 ins.; face small, pointed; high forehead; ears large, twice tragus; wings naked; tail 1.5 ins.; flies at 8 p.m. Fig., Page 26 and rest in order *Myotis lucifugus*.

**SILVER-HAIRED BAT**—Thick wings and ears; naked nose; tragus broad as high; fur long, silky, black with silvery tips; flies at 8.30 p.m. Fig. 3, Page 26 *Lasionycteris noctivagans*.

**BIG BROWN BAT**—4.5 ins., tail 2 ins. (naked); only 1 premolar; sepia brown; flies about 9 p.m. *Eptesicus fuscus*.

**RED BAT**—1 ins., tail 2 ins.; red-buff with white spot on shoulder and chest *Nycterus borealis*.

**HOARY BAT**—5.5 ins., tail 2 ins.; wings, long pointed; flies 9.30 p.m.; gray; northern; migrates *Nycterus cinerea*.

## PROCYONIDAE

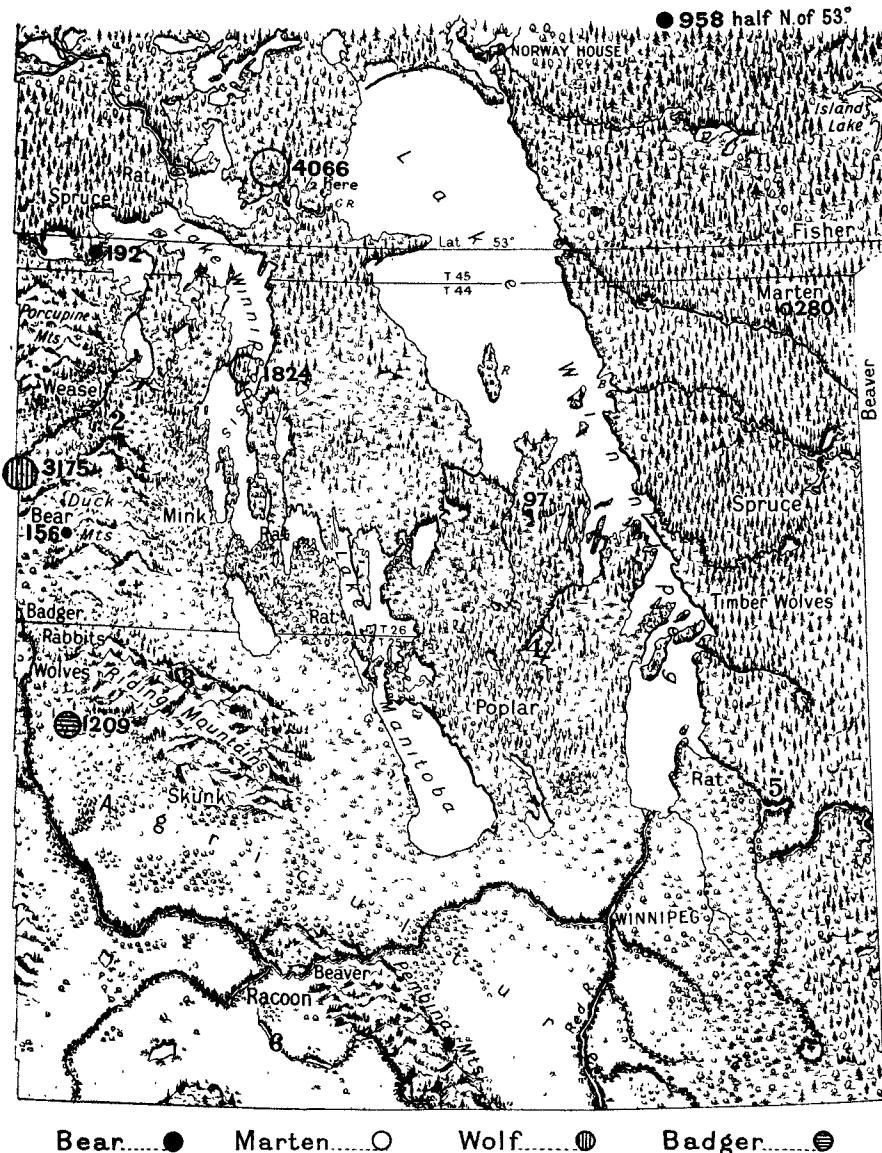
**RACCOON**—North as far as hollow trees; feet long, slender, plantigrade; pads naked; tail long, bushy, ringed; nose pointed; molars tuberculate; omnivorous; nocturnal; sops food; bear-like.

*Procyon lotor*.

### CARNIVORA

Molars broad, flat crushing type; no specialized carnassial teeth; nocturnal; semi-arboreal; omnivorous — **BEARS and COONS**.  
**BEARS**—Large, thick, heavy; flat-footed, can stand; claws 5-5, not retractile; legs short; tail short fur long; color phases not specific

— **URSIDAE**.



### ANIMAL DISTRIBUTION:

From "Fur and Game Resources of Manitoba"—V. W. Jackson, 1926.

**BLACK BEAR: BROWN BEAR**—Same litter; hibernate, Dec.-Mar.; 2 cubs; face convex; semi-arboreal — ***Ursus americanus***.

**GRIZZLY BEAR**—Here 1804, last trapped at The Pas, 1909.  
 Claws long, light, smooth; premolar heeled, ***Ursus horribilis***.

**POLAR BEAR**—Comes south as far as H. B. R.; migratory; semi-aquatic; neck long; head small; fur dense.  
 — ***Thalarctos maritimus***.

**CARNIVORA: FLESH-EATERS**—Pointed, sharp, flesh-cutting carnassial teeth; claws sharp, bent; predatory, alert, quick, fierce; long, prominent canines.

**MINK FAMILY**—Weasels, Martens, Minks, Otters, Skunks, Badger, Wolverine, small, slender, quick, blood-thirsty, carnivores; short legs; sharp teeth; rasping tongue; anal scent glands, soft, dense fur, valuable; mostly dark brown or black and white; terrestrial and semi-aquatic

**MUSTELIDAE.**



Fox . . . . . Weasel . . . .

**ANIMAL DISTRIBUTION:**

From "Fur and Game Resources of Manitoba"—V. W. Jackson, 1926.

**WEASELS and MINKS**—Elongate and slender, agile, alert; sexes differ much in size, female 4-5; stoats, ferrets and fitch.

—*Putorius* of Cuvier: *Mustela* L.

**Weasels**—The smaller group, bicolor in summer, white in winter,

**LONG-TAILED WEASEL**—16 ins.; tail 6 ins., black tip; belly tawny.  
—*Mustela longicauda*.

**RICHARDSON WEASEL; SHORT-TAILED WEASEL; ERMINE** — 11  
ins., tail 3 ins., terminal third black, even in winter; female  
4-5; northern *Mustela cicognanii richardsoni*

**LEAST WEASEL**—Female, 6 ins., tail 1.2, no black tip. —*Mustela rixosa rixosa*.



Mink.....  Lynx..... 

## ANIMAL DISTRIBUTION;

**ANIMAL DISTRIBUTION,**  
From "Fur and Game Resources of Manitoba"—V. W. Jackson, 1926.

**MINKS**—Larger, over 20 ins.; brown, no winter change; white throat patch; semi-aquatic.

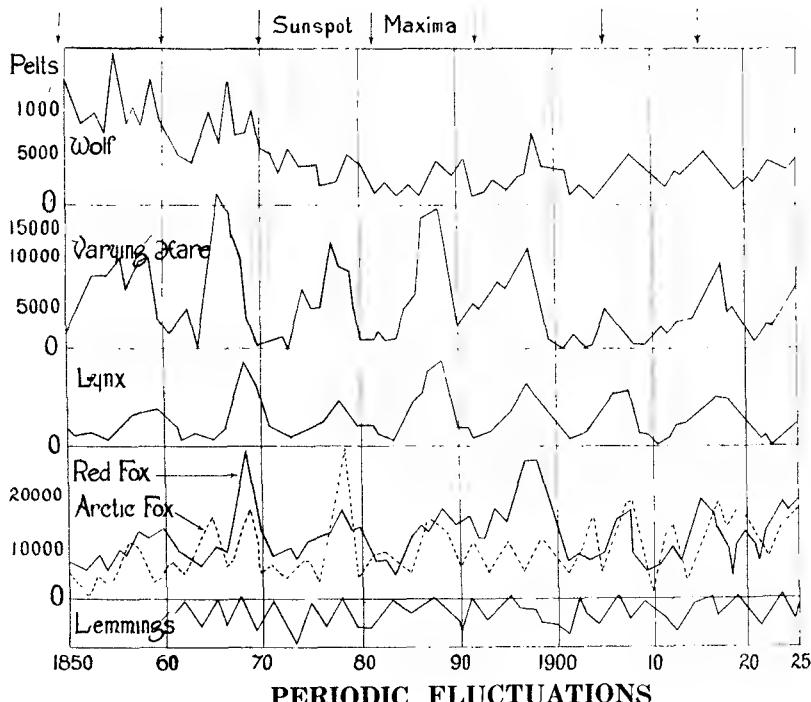
**HUDSON BAY MINK**—Males 27 ins., tail 8 ins.; dark chocolate brown, white throat patch; of mink farm fame; northern.

—**Mustela vison lacustris.**

**MARTEN** and **FISHER**—Teeth 38; tail long and bushy; ears small. Distribution maps, Pages 28 and 33 ----- *Martes*.  
**HUDSON BAY MARTEN; PINE MARTEN; HUDSON BAY SABLE**—26 ins., tail 9 ins.; tricolor, dark back, buff throat patch, legs and tail nearly black; face gray, ears edged whitish.  
—*Martes americana abieticola* (Preble).  
**FISHER: PEKAN: PENNANT MARTEN**—Large, powerful, 36 ins., 10 pds.; tail 15 ins.; nearly black, paler forward; semi-arboreal.  
—*Martes pennanti*.  
**WOLVERINE**—Stout, powerful, flat-footed, bear-like, but tricolor and tail full and bushy; fur shaggy; males 41 ins. 30-35 pds.; broad buff, lateral bands on dark back; trap robber; glutinous. (*Gulo*) ----- *Gulo luscus*.  
**BADGER**—Body squat, heavy, with side hairs to the ground; legs short, tail short, 5 ins.; body 24 ins. 13-23 pds.; hairs tricolor, used in shaving brushes; face banded, black and white; nose pointed like raccoon; claws over an inch, burrows and digs for gophers, fossorial. For distribution, see maps, Pages 28 and 33.  
—*Taxidea taxus taxus*.  
**SKUNKS**—Tail long and bushy; fur long, black with white bands; scent glands highly developed; feet sub-plantigrade; terrestrial or semi-fossorial ----- **MEPHITINAE**.  
**NORTHERN PLAINS SKUNK**—Larger than Eastern, males 29 ins., tail 11 ins. without white pencil; white lateral bands from nose to tail; head small; legs short, slow-moving; nocturnal or crepuscular; increasing with settlement ----- *Mephitis hudsonica*.  
**OTTER**—Seal-like, aquatic, long 40-45 ins., slender; head flattend; legs short; toes webbed; tail long and muscular; pelage short, dense, glossy, valuable ----- *Lutra canadensis*.  
For range and numbers of fur-bearer, see "Fur-bearers in Manitoba", Jackson, 1926.



**WOLVES and FOXES**—Body slender; legs long; toes blunt, 5-4, digitigrade CANIDAE.  
**WOLVES**—Pupil of eye round; upper incisors distinctly 3-lobed *Canis*.  
**COYOTE: PRAIRIE WOLF**—Burrows; fur coarse; yellowish gray. *Canis latrans*.  
**GRAY WOLF OF THE PLAINS: LOBO**—Tail rather short, 11 ins. *Canis nubilis*.  
**TIMBER WOLF**—Large forest wolf; hunts in packs; gray to blackish. *C. occidentalis*.  
 (For geographical races, see Bulletin No. 13 WOLVES, Norman Criddle)  
**FOXES**—Pupil of eye elliptical; tail long and bushy; skulky, *Vulpes*.  
**RED FOX: ROYAL FOX**—Color phases; BLACK, SILVER, CROSS. *Vulpes regalis*.  
 See map, Page 29, **Eastern fox *V. fulva*: Western**.  
**KIT FOX**—Small, slender, swift prairie prowler, burrows; almost extinct *Vulpes velox*.



From "Fur and Game Resources of Manitoba"—V. W. Jackson, 1926.

**CATS and LYNX**—Slender, lithe, solitary prowlers, nocturnal, stealthy hunters; claws sharp, retractile, 5-4, digitigrade; head short and round, no cranial ridge as in Canidae; tongue rasping; pupil of eye elliptical; incisors small, others carnassial **FELIDAE**.  
**CATS**—Tail long, motile, balancing; lithe, slender; **PUMA, COUGAR, JAGUAR** *Felis*.  
**LYNX**—Tail short; body short and stout; legs long; padded feet; ear tufts *Lynx*.  
**CANADA LYNX**—Gray, mottled brown; fur long, soft; largest; tail 4 ins., tip black; legs stout; fore feet large, padded; northern, mostly Churchill River. See map Page 30, *Lynx canadensis*.  
**BOBCAT: WILDCAT**—Reddish brown, streaked with black in front; tail 7 ins., ringed with black; 20 pds.; recently around Kaleida. *Lynx rufus rufus*.

# RODENTIA

**Herbivorous Animals**—Have few teeth, no canines, molars are broad, cusped or corrugate; stomach complex; long intestine and large caecum; docile, non-aggressive; the small rodents, and the large ruminants.

**RODENTS**—Gnawers, small nibblers with 2 long chisel-like incisors, above and below, exposed, brownish (rodent means red teeth); wide space between incisors and molars numerous species, one-third of all mammals; 400 in U. S. A.; cosmopolitan.

—RODENTIA.



Rat.....○ Skunk.....◎ Beaver.....● Fisher.....●

## ANIMAL DISTRIBUTION:

From "Fur and Game Resources of Manitoba"—V. W. Jackson, 1926.  
Page 33

**MICE and RATS**—Slender rodents with long, naked tail; eyes and ears large; upper lip divided; nostrils separated by a furrow; teeth 16, no premolars; largest family of mammals, and half of all rodents; cosmopolitan; man's worst pests ----- **MURIDAE**.

**HOUSE MOUSE**—Introduced with settlers in 1882; 5 litters of 4 to 9 annually; brownish-gray; 7 ins., tail 3.5 ins.! **Mus musculus**.

**NORWAY RAT: BROWN RAT**—Spread to Manitoba in 1904, now across prairies; brown above, gray below; 16 ins. tail 7 ins.

—**Mus norvegicus**.

#### NATIVE MICE and RATS: CRICETIDAE

**WHITE-FOOTED MOUSE: ARCTIC DEERMOUSE**—Dark brown above, white below; black around eyes and whisker spot; eyes and ears large; 7 ins., tail 3 ins.; in wooded transitional zone, Sask.-Alta ----- **Peromyscus maniculatus borealis**.

**Several regional races**—The Osgoode race, paler and more ochraceous; Cypress Hills, Sask.

Baird's Deermouse—Darker, russet to black on back; Southern Manitoba.

**DRUMMOND MEADOW MOUSE**—Smaller and paler than the Eastern Meadow Mouse, east of Red River; bistre above, creamy-white below; 6 ins., tail 1.6 ins., bicolor; yellowish ears and nose.

—**Microtus drummondi**.

**LEAST MEADOW MOUSE: LITTLE UPLAND MOUSE**—Very small, 4 ins., tail 1.2 ins.; bicolor, dusky and buff, gray above, pale below; plains ----- **Microtus minor**.

**GRASSHOPPER MOUSE**—Compact with short, tapering tail, 1.7 ins.; forefeet large; 5 tubercles; fur silky; sharply bicolor; nocturnal ----- **Onychomys leucogaster**.

**LEMMING MOUSE**—Northern or Richardson's Bog Lemming—North of 53, rare in bogs farther south; 5 ins., tail 1 in., bicolor; dark brown above; upper incisors grooved, lower extend along inside of molars; ----- **Synaptomys borealis**.

**BUSH-TAILED WOOD RAT**—Cypress Hills and Southern Alberta; long, soft, flat, bushy tail like Flying Squirrel; feet densely furred.

—**Neotoma cinerea**.

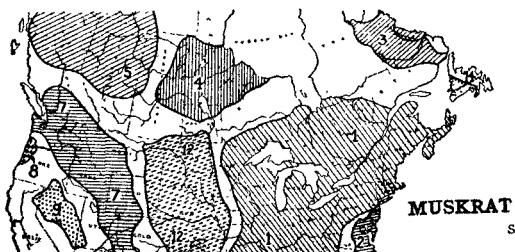
Tail and hind foot of Round-tailed Muskrat



**MUSKRAT**—Tail flattened, nearly bare; hind feet partly webbed; aquatic; body stout; legs short; feet large, toes fringed with stiff hairs; fur thick, long guard hairs; anal musk glands. Distribution map, Page 33 ----- **Ondatra zibethicus**.

**HUDSON BAY MUSKRAT**—Paler and smaller than type.

—**Ondatra z. alba**.



1. *Ondatra zibethicus zibethicus*
2. *Ondatra zibethicus macrodon*
3. *Ondatra zibethicus aquilonia*
4. *Ondatra zibethicus alba*
5. *Ondatra zibethicus spatulata*
6. *Ondatra zibethicus zalophus*
7. *Ondatra zibethicus osoyoosensis*
8. *Ondatra zibethicus occipitalis*
9. *Ondatra zibethicus mergens*
10. *Ondatra zibethicus pallida*
11. *Ondatra zibethicus ripensis*
12. *Ondatra zibethicus cinnamomina*
13. *Ondatra zibethicus Louisiana*
14. *Ondatra obscura*

subspecies of *Ondatra*, after Hollister

**GREAT PLAINS MUSKRAT**—Southern Manitoba (See map).

—*Ondatra zibethicus cinnamomina*.  
(*Ondatra* (Link); *Fiber* (Cuvier) see N. A. Fauna, No. 32, 1911)

**SCIURIDAE**

**SQUIRRELS, GOPHERS and MARMOTS**—Head rounded, mostly long, bushy tails; mostly small, alert, thrifty; *distinct postorbital process of frontal bone*; molars rooted, 5-4, 5-4, last 4 nearly equal; clavicles developed; tibia and fibula separate.

—**SCIURIDAE**.

**SQUIRRELS**—Arboreal, alert, thrifty, slender, lithe, with long, bushy tail; lateral hairs longest; eyes and ears large; thumb rudimentary; no cheek pouches; first upper molar minute, *Sciurus*.

**RED SQUIRREL - CHICKAREE**—Smallest of diurnal tree squirrels; 12 ins tail 15 ins., hind foot, 1.9 ins.; rusty red above, gray sides with dark lateral band bordering white under parts and tail, seasonal changes — *Sciurus hudsonicus*.

**GRAY SQUIRREL**—Large, 18 ins, tail 8 ins., long as body, bushy, edged with white; rusty tinge on back; recently entered Manitoba.

—*Sciurus carolinensis leucotis*.

(The Black Squirrel is a melanistic phase of the Gray)

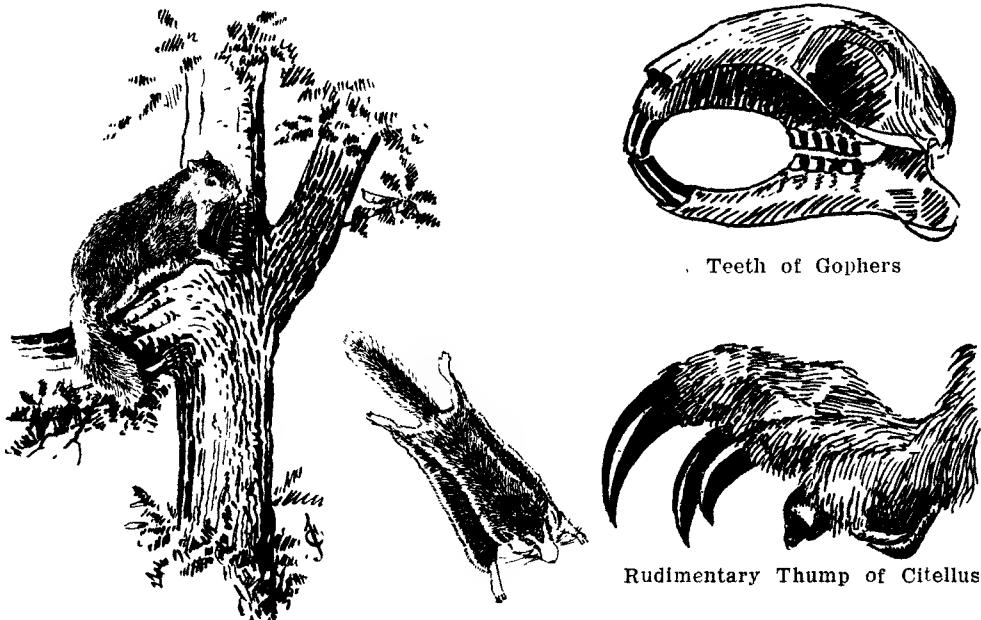
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**FLYING SQUIRREL**—A broad, furry membrane between front and hind limbs, which when extended, enables it to glide from one tree to another; tail flattened; ears large; body depressed, 6 ins., tail 6 ins.; larger than Southern volans, northern, around Hudson's Bay and west; cinnamon above, white below; nests in hollow trees; active all winter; nocturnal; throughout polar zone.

—*Glaucomys (Sciuropterus) sabrinus sabrinus*.

**PALE FLYING SQUIRREL**—Smaller, paler, grayer, pale pinkish cinnamon underparts; found along Pembina Ridge, and Turtle Mts.; type, Portage La Prairie, *Glaucomys sabrinus canescens*.

(For full revision of *Glaucomys (Sciuropterus)* see N. A. Fauna, No. 44, 1918.)





**CHIPMUNKS**—Small terrestrial and with cheek pouches like gophers; tail moderate, erect; back striped, black and buff, 2-8; pointed nose; thumb with well-developed nail; burrow; hibernate. **Tamias and Eutamias.**

**EASTERN CHIPMUNK**—Brownish with black dorsal stripe and two short, white lateral stripes with black borders; tail with black border, not bushy, flat, 4 ins.; Red River Valley.

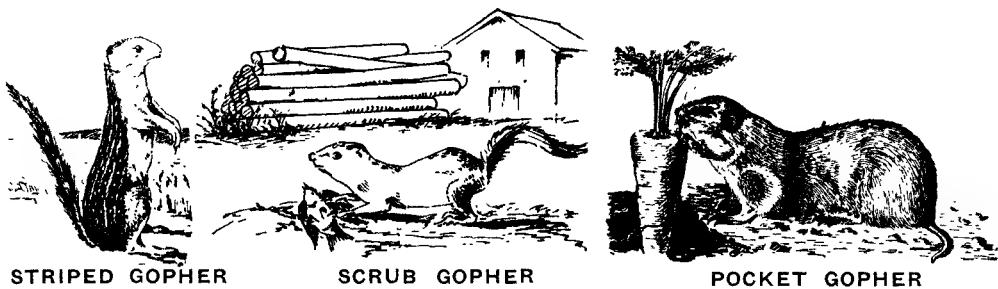
----- *Tamias striatus griseus.*

**WESTERN CHIPMUNK**—Smaller, paler, but longer tail and five black back stripes and four white ones; two more premolars; body 4 ins., tail, 4 ins.; gray with yellowish sides; Rockies eastward to Lake Superior----- *Eutamias minimus borealis.* (For name change *quadrivittatus* to *minimus*, see Howell; Jour. Mammalogy, August, 1922.



**GOPHERS**—Ground squirrels with large cheek pouches and rudimentary thumb and claws for burrowing; head round; ears short; tail short; teeth 1-1, 0-0, 2-1, 3-3, (22), first upper molar small; live on seeds; deep burrows; hibernate; **Spermophilus**: *Citellus*.

**FLICKERTAIL: RICHARDSON GOPHER**—The common destructive gopher of the wheat field; tail short, flickers with alarm; tricolored, tipped white, black border and reddish centre; buff gray slightly speckled; sits erect, stout; prefers dry prairie and light soil ----- *Citellus richardsoni.*



STRIPED GOPHER

SCRUB GOPHER

POCKET GOPHER

**STRIPED GOPHER: THIRTEEN-STRIPED GOPHER**—Alternate white stripes and spots over body; sits erect; medium size, slender; tail short, 5 ins.; less than half total length 11 ins.; transitional zone, being driven out by the Flickertail.

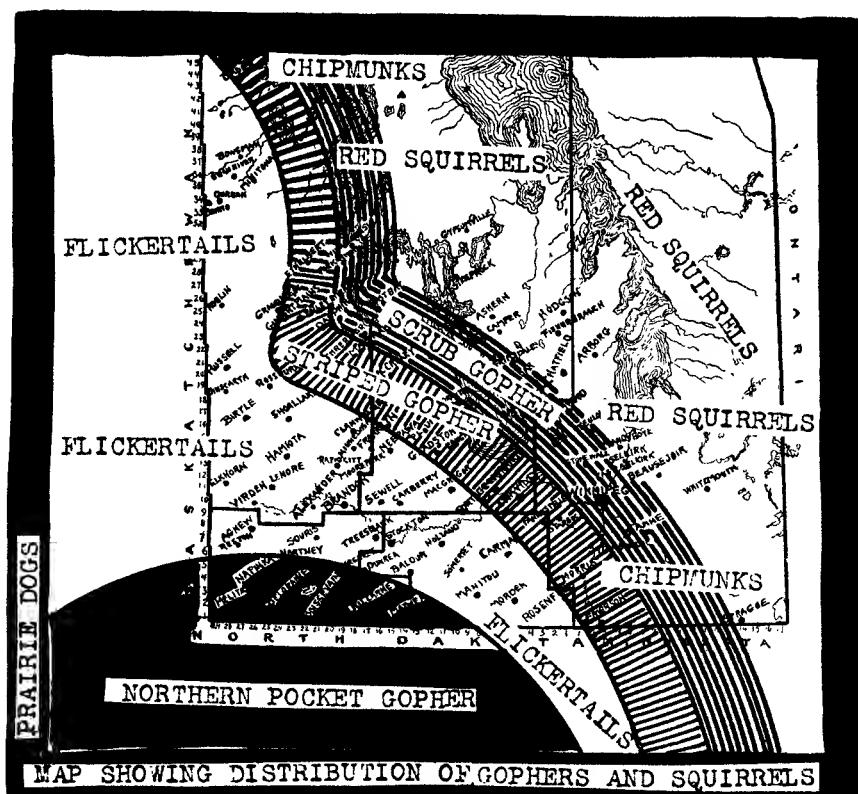
*Citellus tridecemlineatus.*

**SCRUB GOPHER: GRAY GROUND SQUIRREL**—In wooded areas; large, 14 ins.; uniform gray with long bushy tail *Citellus franklini*.  
(Prairie Dog—*Cynomys ludovicianus*, not within our limits.)

**POCKET GOPHER**—Of a separate family, **GEOMIDAE**, with large, fur-lined pouches outside the mouth, extending to the shoulders; molars 4-4, 4-4, incisors large and thick; skull thick, heavy; fore feet clawed for digging; live underground, only leave covered burrow at night or dusk; ears small; incisors not grooved

*Thomomys talpoides.*

(The Mississippi Pocket Gopher, *Geomys bursarius*, not within our limits, has grooved incisors—Minnesota).



**WOODCHUCK: GROUNDHOG**—A large MARMOT, largest of the ground squirrels, 20 ins., tail, 6 ins.; reddish, mixed with gray, body stout, 9 pds.; beaver-like but bushy tail; thumb with broad, flat nail; cheek pouches small; terrestrial, burrowing, deep hibernating; preferring rocky places; diurnal; throughout Northern Canadian zone *Marmota monax canadensis*.

#### CASTORIDAE

**BEAVER**—Tail broad, flat and scaly; feet webbed, aquatic, nocturnal; toes 4-4, 2nd hind toe double; body robust, largest of rodents; 43 ins., tail 16 ins., 30-68 pds.; tibia and fibula separate, as in squirrels, but cheek teeth not rooted; re-entrant molar folds, incisors red, long and much curved as in squirrels.

—*Castor canadensis*.



Mammal Distribution in Northern Manitoba  
From "Fur and Game Resources of Manitoba"—V. W. Jackson, 1926.

## ERETHIZONTIDAE

**PORCUPINE**—White, stiff, pointed, barbed, erectile quills mixed with long, coarse, shiny hairs above, softer fur below; feet plantigrade, gait clumsy; toes 4-5, strong, curved claws for climbing, arboreal; ears short; mammae 4; teeth 20; molar complex.  
—*Erethizon dorsatum*.

## ZAPODIDAE

**JUMPING MICE**—Tibia and fibula united, they are a distinct family, ZAPODIDAE, with very long tail and hind legs for jumping: internal cheek pouches; upper incisors narrow, grooved and curved; eyes and ears large; one small upper premolar, molars complex folds ----- **ZAPODINAE**.

**HUDSONIAN JUMPING MOUSE**—Yellowish brown above with dark, dorsal band; fur coarse; long leaps of ten or twelve feet, showing white beneath; tail 5.3 ins., bicolor; feet white, hind foot 1.2 ins. ----- *Zapus hudsonius hudsonius*.

**PRAIRIE JUMPING MOUSE**—Larger and brighter color; Saskatchewan.  
—*Zapus h. campestris*.

## LAGOMORPHA—LEPORIDAE

**RABBITS**—Long, strong hind legs for leaping (Le-a-pus); sit on hind shanks; tail short; ears long; incisors 2-1, small wedge teeth bracing the upper incisors (unique); upper lip divided; clavicle reduced; toes 5-4; American rabbits are hares, do not burrow ----- **LEPORIDAE**.

**VARYING HARE: SNOWSHOE HARE: BUSH RABBIT**—White during winter; ears as long as head, 3 ins.; hind feet longer; tail 2 ins.; evergreen woods and poplar zone.  
—*Lepus americanus americanus*.

**Minnesota Varying Hare**—Paler, buff in summer.

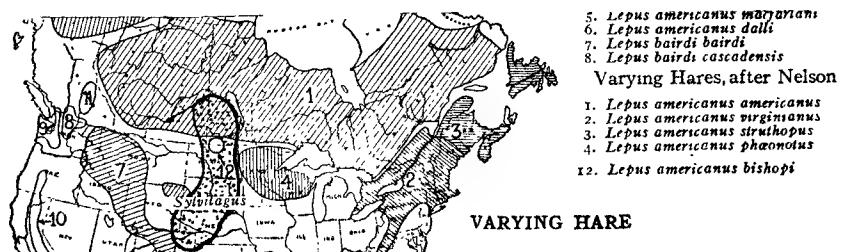
*L. americanus phaenotus*.

**Turtle Mountain Varying Hare**—Dull brown or rusty *L. a. bishopi*.

**PRAIRIE HARE: WHITE-TAILED JACK-RABBIT**—Ears long, 4 ins. and black-tipped; tail, 4 ins., whiten throughout the year; body uniform buff-gray in summer, white in winter, long, 24 ins.; prefers cultivated fields; increasing with settlement.  
—*Lepus campestris* now *L. townsendi campanius* (Hollister).

**NEBRASKA COTTONTAIL**—Our only brown rabbit in winter; has spread northward, rapidly during recent years, now north to 53°; smaller than native bush rabbit, 16 ins.; tail upturned, white showing, ears 2 ins.! hairs tricolor (agouti) above, pale buff below ----- *Sylvilagus floridanus similis*.

Dotted area shows present range of *Sylvilagus*.



## ARTIODACTYLA

**BEER, ELK, MOOSE, BISON, ANTELOPE**—Split-hoofed cud-chewers (Ruminants); large, digitigrade mammals, with horns, branched and shed during winter, except antelope and bovines; broad convoluted, ridged molars for chewing; clavicle absent; stomach 4-chambered ----- **RUMINANTIA**.

**DEER, ELK, MOOSE**—Males with branched antlers of solid bone, shed annually; hair short, coarse and brittle; sylvan; big game. —**CERVIDAE**.

**DEER**—Antlers directed forwards, prongs upward; on males only, cylindrical, first prong upward; tail (flag) large, flat and thickly haired; hoofs narrow, young spotted fawns ----- **Odocoileus**.

**VIRGINIA DEER: WHITE TAIL**—Antlers bend sharply forward, tines backward; tail white beneath, dark centre above, 11 ins. bucks 200 pds.; leg gland 2 ins.; reddish in summer, grayish in winter; prefers clearings --- **Odocoileus virginianus borealis**.

**MULE DEER: BLACK TAIL: JUMPER DEER**—Smaller, stouter deer, with narrow, black-tipped tail 7 ins., surrounded by white patch; ears large, over 10 ins. (mule ear); metatarsal gland 5 ins.; rusty yellow, darker beneath; fawn buff and spotted; antler tines pronged or forked. —**Odocoileus virginianus (hemionius)**.

**WAPITI: ELK**—Antlers directed backwards, the prongs forward, the first prong low, projecting over brow; *Cervus*; tail very short, with large white patch on rump; sides yellowish gray; fawns spotted; nose naked; small upper incisor; one species related to the red deer of Europe, *Cervus canadensis manitobensis*.

**MOOSE**—Large, 900 to 1400 pds., with high shoulders; antlers broad, palmate with short prongs projecting upwards; hairy muzzle; broad, convex, projecting, prehensile; “bell” of hanging growth of skin and long hair on throat; tail very small; legs long, ungainly; ears large; female much smaller, and no antlers ----- **Alces americana americana**.

(The European Elk is *Alces alces*.)



Leg Glands and Tail of Mule-Deer and Virginia Deer

**CARIBOU**—Flattened antlers on both sexes, the brow-prong broad and extending over the face; legs short; weight 250 pds.; **Rangifer**.

**WOODLAND CARIBOU**—Reddish brown, with white feet; neck and dewlap white in winter; muzzle hairy; hoofs broad and flat, cloots long nearly reach the ground; larger than White-tail, smaller than Wapiti; less gregarious; northern Canadian zone, woods **Rangifer caribou caribou**.

**RICHARDSON CARIBOU**—Gregarious; darker on head, neck and ears; hairs brown to the roots; Hudson's Bay shore to Moosinee. **Rangifer caribou sylvestris**.

**BARREN LAND CARIBOU**—Smaller, paler; light antlers, only three palmating; gregarious, migrate south along Hudson's Bay during winter **Rangifer arcticus arcticus**.

### Lago morpha

incisors  $\frac{1}{2}$  to  $\frac{6}{5}$  in young

Prismatic  $\frac{1}{2}$

$I \frac{1}{3} \quad C \frac{1}{2} \quad M \frac{2}{3}$

in middle and upper

in lower portion of jaws only

Cocoon spiral

Articulation of tibiae

Tibia fused Tibia

Articulating with Calcaneum

Articulation of tibiae

Dental identata 1849

### Rodents

$\frac{1}{2}$  never more in young

$\frac{1}{2}$  " " " "

$I \frac{1}{2} \quad Pm \frac{1}{2} \quad M \frac{3}{3} \quad M \frac{2}{2}$

Narrow palate. Lower teeth wider

Incisor and upper jaws Page 41 glenoid fossa smooth  
No spiral fold free rotary motion (primitive)

## ANTILOCAPRIDAE

**ANTELOPE: PRONGHORN**—Hollow, deciduous horns on a bony core, on both sexes, black smooth, round recurved at tip, short process forward; no leg glands, but cutaneous scent glands under ear, on hip, rump and back of hock; large, white, signal crupper-disces, with centre musk glands; hair yellowish, coarse and brittle; mammae 4; monotypic; about 1,400 now protected in southern Sask., and Alta. *Antilocarpa americana*.

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**BISON: BUFFALO**—A bovine ruminant, with permanent simple, hollow horns on both sexes; gregarious; cattle family, **BOVIDAE**.

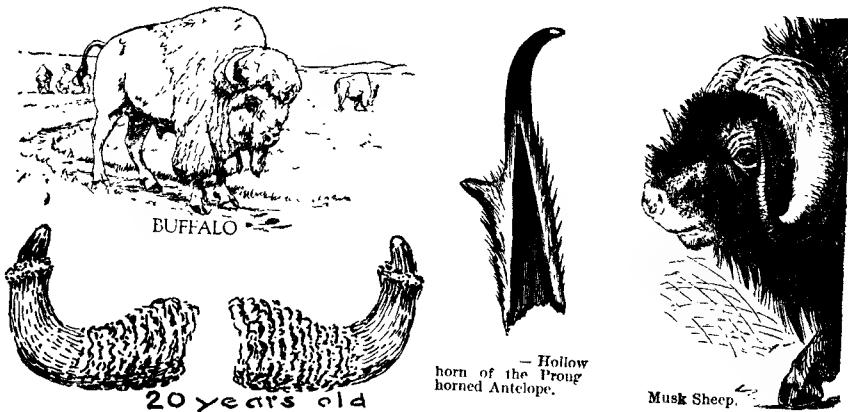
**AMERICAN BISON**—Highest at shoulders; strong with long shaggy mane forward, faces wind during storm; smooth, black horns curved outward and upward; head large and low; hoofs broad; tail long; back sloping to low hindquarters; nose naked; pastoral; nearly extinct in 1900, now ten thousand in government reserve at Wainwright, Sask and with Wood Buffalo at Vermillion *Bison bison bison*.

**WOOD BISON**—Larger and darker, last remnant of original herd retreating in the valley of the Mackenzie River, Vermillion, Alta. *Bison b. athabascae*.

**MUSKOX**—A bovine ruminant of the sheep tribe; long shaggy wool; horns flattened in front, corrugated, turning sharply downward and forward; nose white; gregarious and herd facing outward for protection; barren tundra to Arctics, *Ovibos moschatus*.

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Note—Seton's "Life Histories of Northern Animals" has long been out of print and now scarce, but still our best reference. Our next next nearest fauna is Vernon Bailey's "Mammals of North Dakota, N. A. Fauna, No. 19, 1926. For Geographic races and generic traits Anthony's "North American Mammals", 1928.



## NOTES

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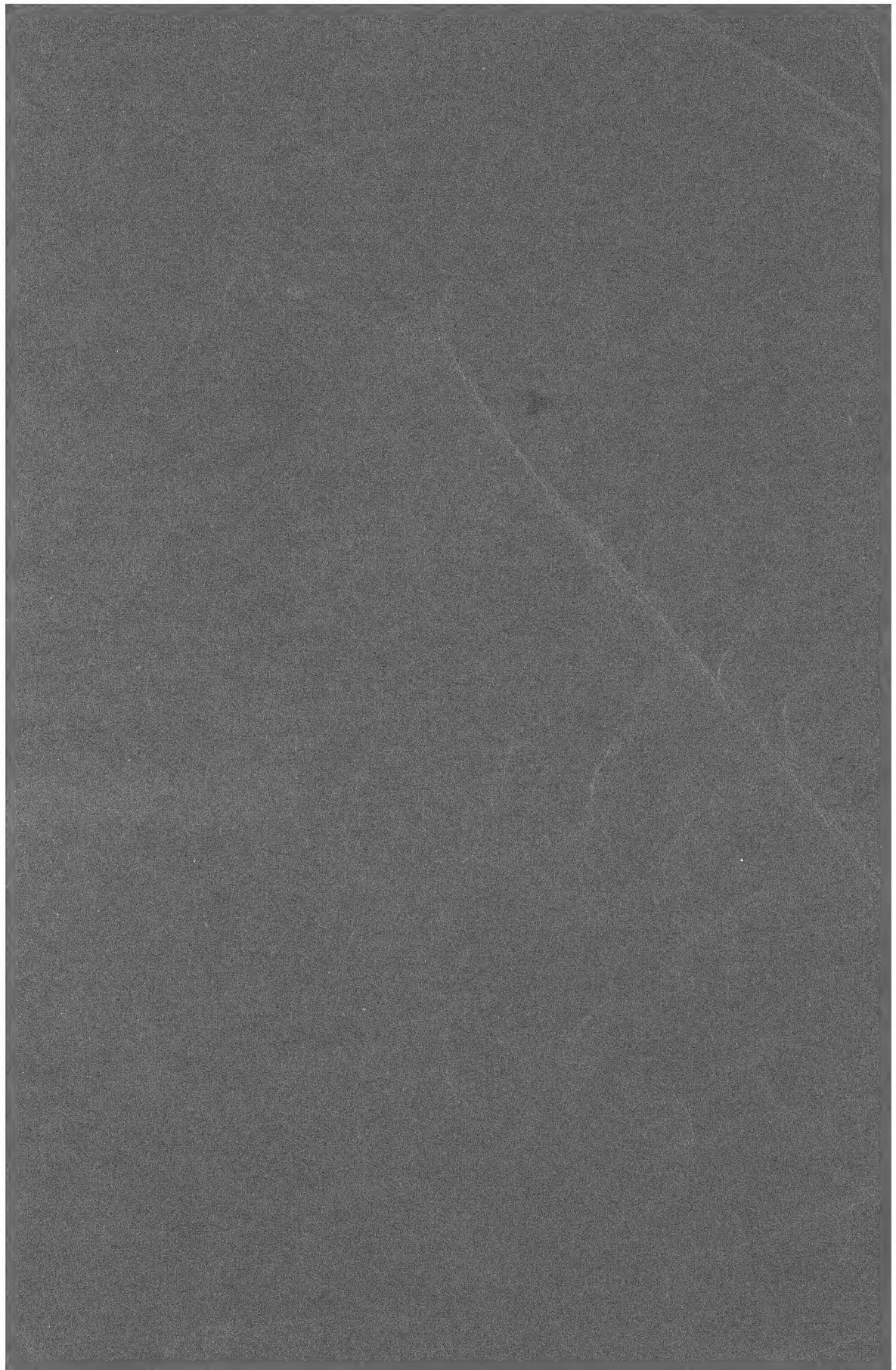
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